ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1987

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

SECOND SESSION

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

TOM BEVILL, Alabama, *Chairman*

LINDY (MRS. HALE) BOGGS, Louisiana	JOHN T. MYERS, Indiana
BILL CHAPPELL, Jr., Florida	VIRGINIA SMITH, Nebraska
VIC FAZIO, California	ELDON RUDD, Arizona
WES WATKINS, Oklahoma	
BILL BONER, Tennessee	

HUNTER L. SPILLAN, GEORGE A. URIAN, DONALD P. SMITH, and AARON D. EDMONDSON,
Staff Assistants

PART 6

DEPARTMENT OF ENERGY:

Page

Federal Energy Regulatory Commission **1**

Nuclear Regulatory Commission **175**

Departmental Administration **599**

Power Marketing Administrations **785**

Atomic Energy Defense Activities **1071**

Printed for the use of the Committee on Appropriations

U.S. GOVERNMENT PRINTING OFFICE

59-177 O WASHINGTON : 1986

H181-31

COMMITTEE ON APPROPRIATIONS

JAMIE L. WHITTEN, Mississippi, *Chairman*

EDWARD P. BOLAND, Massachusetts
WILLIAM H. NATCHER, Kentucky
NEAL SMITH, Iowa
JOSEPH P. ADDABBO, New York
SIDNEY R. YATES, Illinois
DAVID R. OBEY, Wisconsin
EDWARD R. ROYBAL, California
LOUIS STOKES, Ohio
TOM BEVILL, Alabama
BILL CHAPPELL, Jr., Florida
BILL ALEXANDER, Arkansas
JOHN P. MURTHA, Pennsylvania
BOB TRAXLER, Michigan
JOSEPH D. EARLY, Massachusetts
CHARLES WILSON, Texas
LINDY (MRS. HALE) BOGGS, Louisiana
NORMAN D. DICKS, Washington
MATTHEW F. McHUGH, New York
WILLIAM LEHMAN, Florida
MARTIN OLAV SABO, Minnesota
JULIAN C. DIXON, California
VIC FAZIO, California
W. G. (BILL) HEFNER, North Carolina
LES AuCOIN, Oregon
DANIEL K. AKAKA, Hawaii
WES WATKINS, Oklahoma
WILLIAM H. GRAY III, Pennsylvania
BERNARD J. DWYER, New Jersey
BILL BONER, Tennessee
STENY H. HOYER, Maryland
BOB CARR, Michigan
ROBERT J. MRAZEK, New York
RICHARD J. DURBIN, Illinois
RONALD D. COLEMAN, Texas

SILVIO O. CONTE, Massachusetts
JOSEPH M. McDADE, Pennsylvania
JOHN T. MYERS, Indiana
CLARENCE E. MILLER, Ohio
LAWRENCE COUGHLIN, Pennsylvania
C. W. BILL YOUNG, Florida
JACK F. KEMP, New York
RALPH REGULA, Ohio
GEORGE M. O'BRIEN, Illinois
VIRGINIA SMITH, Nebraska
ELDON RUDD, Arizona
CARL D. PURSELL, Michigan
MICKEY EDWARDS, Oklahoma
BOB LIVINGSTON, Louisiana
BILL GREEN, New York
TOM LOEFFLER, Texas
JERRY LEWIS, California
JOHN EDWARD PORTER, Illinois
HAROLD ROGERS, Kentucky
JOE SKEEN, New Mexico
FRANK R. WOLF, Virginia
BILL LOWERY, California

FREDERICK G. MOHRMAN, *Clerk and Staff Director*

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1987

THURSDAY, MARCH 13, 1986.

FEDERAL ENERGY REGULATORY COMMISSION

WITNESS

ANTHONY G. SOUSA, ACTING CHAIRMAN FERC

Mr. **BEVILL**. The subcommittee will come to order. Chairman Sousa, I just want to say at the beginning that we're certainly pleased with your operation. And FERC has a very good track record, and we appreciate what you all are doing down there, and I'm sure you're going to carry on in the usual tradition. So we're pleased to have you with us for your first visit with this committee.

Before you begin your statement, I would like to call to your attention a situation involving the SEGS-II project. We have discussed this before and I know you're aware of my interest in it.

Do you agree that on this project, and similar projects, FERC should not change its policies and rules in midstream, even in some cases after the projects are finished?

Mr. **SOUSA**. Yes, Mr. Chairman, I do agree. It's a question of an element of fairness here. And if we do enunciate any policies or rules at the early stages of any matter, then it's only fair that we do not change these policies or rules later on because there would be reliance, and in some case detrimental reliance, on those rules and policies.

Mr. **BEVILL**. Yes.

Mr. **FAZIO**. Mr. Chairman, would you yield?

Mr. **BEVILL**. Yes.

Mr. **FAZIO**. I want to thank you for asking the question. I appreciate the answer. And I, simply on behalf of people interested in renewable energy and certainly the people in my State, want to lend support to your efforts and thank you for those you have made in this regard.

Mr. **BEVILL**. Yes. We're talking about the world's largest solar project there that is completed, and then someone comes up and says oh, we're not sure you ought to even have a license. And that sounds like the way that the Nuclear Regulatory Commission used to operate. Fortunately they are improving now. They used to wait until the plant was built, and then they'd say why, you can't use that material, those pipes don't meet the standards. And we're experts on that kind of thing, so we sure don't want you all to get into that.

Mr. SOUSA. Mr. Chairman, we don't want to look up to the NRC as an example of how we should be operating.

Mr. BEVILL. We want you to look at their past record as a way not to operate.

Mr. SOUSA. Yes, sir.

Mr. BEVILL. Yes, sir, that's right. And as I say, in all fairness to them, they've improved a great deal and we're glad they have. Of course, they couldn't go anywhere except up. You may proceed as you wish, Mr. Chairman.

STATEMENT OF ANTHONY G. SOUSA, ACTING CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION

Mr. SOUSA. Thank you, Mr. Chairman, and Members of the subcommittee. I appreciate this opportunity to discuss with you today the Federal Energy Regulatory Commission fiscal year 1987 budget request. I am accompanied by Mr. William G. McDonald, the Commission's Executive Director, on my left; and Mr. William H. Satterfield, the Commission's General Counsel, here on my right; and by other directors of the Commission's program offices who will be available to assist me in answering all of your questions.

Mr. BEVILL. Alabama is proud of Mr. Satterfield. For the record, he's making an appearance, and we're glad to have you, Bill.

Mr. SATTERFIELD. Thank you, sir.

Mr. SOUSA. That's why I brought him here, sir. [Laughter.]

Mr. BEVILL. You're sure off to a good start.

BUDGET OVERVIEW

Mr. SOUSA. The Commission's fiscal year 1987 budget request, which meets the deficit reduction targets under the Balanced Budget and Emergency Deficit Control Act of 1985, known as Gramm-Rudman-Hollings, is $99,079,000, and we have allowed 1,659 full-time employees. Of this, $78,754,000 would be offset by revenues from fees and charges.

For fiscal year 1986, the Commission received an appropriation, including transfer from DOE, of $98,852,000. So, the 1987 budget request represents an increase of only $227,000 over fiscal year 1986. However, our fiscal year 1986 appropriation was reduced by $4,109,000 effective March 1, 1986 pursuant to Gramm-Rudman-Hollings. The Commission has reduced staffing levels and associated expenses in fiscal year 1986 to accommodate this $4,109,000 reduction.

MANAGING CHANGE IN A REGULATION ENVIRONMENT

The Commission is in the midst of a vastly changing energy environment and is using two approaches to manage this change. First, we are adapting the regulatory framework to changing energy markets to ensure the public the continuation of an adequate and reliable supply of energy at the lowest reasonable rates; and second, we are improving the internal operations of the Commission to be more responsive and timely.

NATURAL GAS REGULATION

Over the past two years, the Commission has been confronted with an evolving competitive market in the commodity of natural gas. Most natural gas supplies, as a result of the Natural Gas Policy Act, are no longer subject to Federal regulation as to market entry, exit, and price. However, the integrated transportation network, which is monopolistic in some markets and competitive in others, is still generally subject to Federal regulation.

Accordingly, in October 1985, the Commission issued Order No. 436 which retains and revises utility type regulation over the interstate transportation function, while allowing the commodity market for natural gas to continue to develop in a competitive fashion.

The Commission has also established a procedural schedule to receive comments on the Secretary of Energy's proposed revisions in the way old gas is regulated. In his proposal, the Secretary suggests that flowing old gas prices be set at a single level equal to the highest ceiling price available at the time. The Commission's schedule calls for initial comments by February 25th, at which time more than 200 comments were received, reply comments by March 27th, and a public conference scheduled for April 10 and 11.

The Commission has embarked on an ambitious natural gas program, and will require $45.2 million in fiscal year 1987 to stay abreast of the rapidly changing conditions and reduce pending workload by more than 33 percent from fiscal year 1985.

HYDROPOWER REGULATIONS

Major changes have also occurred in the Commission's hydropower program. These changes, which are primarily the result of court decisions, have necessitated a complete reconsideration of many long-held principles underlying the program, especially in the area of environmental review. In response to what amounted to a judicial redefinition of our role, the Commission, after much study and voluminous public comments, implemented on a trial basis a new procedure, the Cluster Impact Assessment Procedure, known by its acronym CIAP, for evaluating environmental impacts on river basins with multiple proposed hydropower projects.

In April 1985, the Commission approved the commencement of the CIAP in the Salmon, Snohomish, and Owens River Basins. We have completed the first two phases of each of these studies and are proceeding on schedule. We're also currently evaluating the effectiveness of this approach.

As we look at future planning for the hydropower program, the Commission will be faced with a growing workload due in part to legislation that has stimulated development as well as the issue of relicensing. We will need $29.4 million for this program in fiscal year 1987 to—

Mr. **Bevill**. Mr. Chairman, I'm sorry to interrupt you, but would you pause right here for a minute or two until Mr. Fazio or some other Member gets back from voting so we can go and vote? We have about four or five minutes to get over there and vote.

Mr. **Sousa**. Certainly.

Mr. **Bevill**. And so, if you will, just pause a moment or two, I will go vote and whoever comes in can carry on.

Mr. **Sousa**. Thank you.

Mr. **Bevill**. We'll be back.

[Recess.]

Mr. **Fazio**. Go ahead, Mr. Sousa. We will reconvene and keep on going as if Mr. Bevill were still with us.

Mr. **Sousa**. Thank you. As we look at future planning for the hydropower program, the Commission will be faced with a growing workload due in part to legislation that has stimulated development as well as the issue of relicensing. We will need $29.4 million for this program in fiscal year 1987 to process our workload in an expeditious manner. We intend to pare the pending workload by approximately 15 percent.

OIL PIPELINE REGULATION

In the area of oil pipeline regulation, the Commission has adopted a new approach necessitated by the court's remand of the "Williams I" opinion, that will require a more lengthy and complex review process. This will result in more formal rate cases and in a projected doubling of pending workload in oil pipeline regulation by the end of fiscal year 1987. Accordingly, we will need $4,139,000 in this area.

ELECTRIC POWER REGULATION

The electric utility industry that the Commission regulates also is experiencing changes to which we are attempting to respond. Last year, we continued to pursue a generic approach to the rate of return issue in order to expedite cases. Also we initiated a broad, two-phase notice of inquiry into the way we regulate the industry.

Our concern is that regulation encourage and not impede the efficient generation, transmission, and distribution of electricity. The first phase addresses our regulation of coordination transactions and transmission service. The second phase addresses our regulation of requirements transactions.

Many complex issues affecting the electric utility industry will have to be addressed in fiscal year 1987, such as least cost supply, pricing, and the efficiency in the bulk power markets. We will need $20.4 million for this program so that we may adequately address and resolve these and other issues that are so vital to the future health of the industry and consumers.

MANAGEMENT IMPROVEMENTS

And now I would like to turn to the management of the FERC itself. Last year we were able to report that staff productivity increased by 20 percent. This past year we continued to improve our productivity by achieving an additional 7 percent increase, and we have established a 5 percent average annual target for fiscal year 1986 and 1987.

It is important to consider these numbers in light of the fact that private sector annual productivity improvement rates are in the neighborhood of one to two percent. Through these productivity gains, we have been able to substantially reduce the number of backlogged cases while actually reducing the size of the staff over the past three years.

Productivity improvement is one factor which contributes to the efficient operation of the FERC. Another is the continued pursuit of administrative savings. This budget request includes a $1.8 million reduction in administrative costs which served to offset the cost of inflation and most of the costs of increased environmental studies.

FEES AND CHARGES

Another factor is increased revenues which, in effect, reduces the FERC's net cost to the taxpayers. I'd like to mention some good news that we received yesterday. We received word that the court had upheld our fee—our authority to impose fees and also the manner in which we impose the fees. This was in the "Williams Petroleum Company" case—Phillips, I'm sorry, the Phillips case.

In May 1985, the Commission sent to Congress increased fee and annual charges legislation which could result not only in a total offset to the FERC appropriation, but, more important, contribute an additional $50 million annually to reducing the deficit.

EQUAL ACCESS TO JUSTICE ACT

Finally, there is an administrative matter arising under the Equal Access to Justice Act that I would like to bring to the attention of the subcommittee. Two United States Courts of Appeals have awarded attorneys' fees and expenses to intervenors in two cases: "Washington Urban League v. FERC" and "Papago Tribal Utility Authority v. FERC."

However, sections 305 and 502 of our Appropriations Acts of fiscal year '84, '85, and '86 prohibit the use of appropriated funds to pay the expenses of or otherwise compensate parties intervening in Commission proceedings. Therefore, we are seeking special permission to pay the two court awards from our appropriations. This payment problem may also arise in other proceedings that are currently pending before the courts.

SUMMARY

In summary, the Commission's goal is to bring order to a rapidly changing energy environment while contributing our fair share to meeting the deficit reduction targets of the Administration and the Congress. The Commission's fiscal year 1987 budget request of $99.1 million is our commitment to this difficult task.

My staff and I are available to answer any of the questions that the subcommittee may have. And, I would like to thank Mr. Bevill for the kind remarks that he made concerning our agency. Thank you.

Mr. **Fazio**. Thank you, Mr. Chairman. I'm sure you don't mind me calling you Mr. Chairman. I certainly don't mind being called Mr. Chairman at times. We can all get used to that, can't we?

Mr. **Sousa**. Well, I like that very much since I'm only acting chairman.

Mr. Fazio. So am I. [Laughter.]

Anyway, I think we should just enjoy this as long as we possibly can.

Mr. Sousa. I agree.

Mr. Fazio. I just wanted to welcome all of you, Mr. Satterfield and Mr. McDonald as well. And, as it turns out, I was going to ask some questions about fees. I happen to be a member of the Budget Committee as well, and I'm very interested in finding ways to reduce the burden on the general fund. And one of the things that struck me is that really as we look at all of the work you do, the only area you're allowed to charge user fees in currently, as I understand it, is in regard to hydro projects.

Is that correct?

Mr. Sousa. That's correct.

Mr. Fazio. And we're looking now to the future of possibly including the oil pipeline or natural gas lines, transmission facilities for electrical power. All of these possibly could be somehow regulated with user fees paying the costs of that regulatory process.

Is that the thrust of the legislation that you've introduced?

Mr. Sousa. That is correct, sir.

Mr. Fazio. What is the status of that now?

Mr. Sousa. I'd like to defer to our Executive Director—

Mr. McDonald. Well, it's in the House. It was reviewed last year, but it didn't go beyond the conference on the budget reconciliation bill, and that's where it is now. It's for basically $26 million that would come in '87 if it was passed, but it would grow at incremental rates so that it would get pretty close to having a zero budget at the FERC. A ballpark guess is that in three or four years you would have a zero cost.

Mr. Sousa. I understand that there's a difference of $26 million if the legislation is passed, and if it is not—in other words, about 53 versus about 79.

Mr. McDonald. Right.

Mr. Fazio. Currently before the Energy and Commerce Committee, is it? Is that the jurisdiction?

Mr. McDonald. I believe that's right.

Mr. Fazio. Is the Administration making it a high priority? Is OMB pushing it? Do you know what their position is?

Mr. Sousa. I don't know myself, but I think as far as we're concerned, that would be a very high priority for us. One other thing I should mention, Congressman Fazio, is that even in the hydropower area we have now looked to see whether there are other agencies of Government for whom we can collect some fees so that there should be some general return of monies to the Federal Government, not just the FERC.

Mr. Fazio. Mr. Chairman, do you want me to continue, or do you want me to yield back to the Chair?

Mr. Bevill. You go right ahead.

Mr. Fazio. Thank you. At this point, then, there is no way we could make up the 45 or, I guess, the $49 million discrepancy without the enactment of that legislation, is that correct?

Mr. Sousa. That's correct, sir.

Mr. McDonald. That's correct, Mr. Fazio.

Mr. Sousa. And even with the legislation there would still be a difference. We were hoping to reach about $79 million with legislation in place.

Mr. Fazio. Do you know what the position of the various industries that come before you, that happen to deal in these other forms of energy, are at this time? Do you know if they're opposed to paying user fees?

Mr. Sousa. I do not know, sir, but I would think that there would be some objection to that, especially since we were taken to court on our imposition of fees—

Mr. Fazio. On the Phillips issue.

Mr. Sousa. Yes.

Mr. Bevill. Would you supply that for the record?

Mr. Sousa. I will, sir.

[The information follows:]

Phillips Petroleum Company v. FERC

A decision was issued by the United States Court of Appeals for the Tenth Circuit on March 10, 1986 affirming the Commssion's authority to impose fees. Generally, Phillips Petroleum argued that four fee rules established by the FERC were not valid under the Independent Offices Appropriations Act of 1952 and, even if allowed under the Act, were not valid because they were imposed for activities which did not "confer a benefit on the regulated entities." The court rejected both arguments and "(held) that the Commission has the authority to recover the full costs of providing services to the identifiable beneficiaries under the IOAA." A copy of the decision follows:

PUBLISH

UNITED STATES COURT OF APPEALS

FOR THE TENTH CIRCUIT

FILED
United States Court of Appeals
Tenth Circuit
MAR 1 0 1986
HOWARD K. PHILLIPS
Clerk

PHILLIPS PETROLEUM COMPANY,
PHILLIPS OIL COMPANY,
TRANSCONTINENTAL GAS PIPE LINE
CORPORATION, INTERSTATE NATURAL
GAS ASSOCIATION OF AMERICA,

Petitioners

v.

FEDERAL ENERGY REGULATORY
COMMISSION,

Respondent

CONOCO, INC.,

Intervenor.

Nos. 84-1846, 84-2267,
84-2270, 84-2786,
84-2787, 85-1396,
85-1397, 85-1398, and
85-1399

**PETITIONS FOR REVIEW OF AN ORDER OF THE
FEDERAL ENERGY REGULATORY COMMISSION**

Jennifer A. Cates, (Larry Pain, C.J. Roberts with her on the brief) of Bartlesville, Oklahoma, Attorneys for Petitioners, Phillips Petroleum Company and Phillips Oil Company.

John W. Ebert (Thomas F. Ryan, Jr. and Robert G. Hardy with him on the brief) of Andrews & Kurth, Washington, D.C., Attorneys for Petitioner, Transcontinental Gas Pipe Line Corporation; John J. Cheatham, III, Washington, D.C., Vice President, General Counsel and Secretary, and Edward B. Myers, Attorneys for Petitioner, Interstate Natural Gas Association of America; R.V. Loftin, Jr., of counsel, Houston, Texas.

Joshua Z. Rokach (Arlene Pianko Groner, Herome M. Feit, John N. Estes, III and William Satterfield, with him on the briefs), Washington, D.C., Attorneys for Respondent, Federal Energy Regulatory Commission.

Before **BARRETT** and **MOORE**, Circuit Judges, and **THEIS**,* District Judge.

BARRETT, Circuit Judge.

---

*The Honorable Frank G. Theis, United States District Judge for the District of Kansas, sitting by designation.

This case involves consolidated petitions to review four rules promulgated by the Federal Energy Regulatory Commission (FERC or Commission). The rules establish fees pursuant to the Independent Offices Appropriations Act (IOAA), 31 U.S.C. § 4830, recodified, 31 U.S.C. § 9701, which authorizes agencies to collect fees for services provided to identifiable beneficiaries and thereby make agencies "self-sustaining to the extent possible." These rules are FERC orders 360, 361, 394, and 395.

FERC Order 360

First, we are asked to review FERC order 360, "Fees Applicable to Producer Matters Under the Natural Gas Act," accompanied by order 360-A, "Order Denying Rehearing and Clarifying the Final Rule," issued February 6, 1984, and April 20, 1984, respectively. A petition to review was filed in this court by Phillips Petroleum Company and Phillips Oil Company (Phillips) on June 18, 1984.

FERC order 360 establishes fees for the services and benefits the Commission provides to producers under the Natural Gas Act (NGA), 15 U.S.C. §§ 717-717w. According to the Commission, the rule is authorized by the IOAA. Specifically, under order 360 the Commission established the following fee schedule for services and benefits provided to producers under the NGA:

(1) $800 for Commission review of applications for blanket certificates for small producers under section 7(c) of the NGA, filed in accordance with 18 C.F.R. § 157.40(b);

(2) $1600 for Commission review of applications by producers for certificates of public convenience or necessity under § 7(c) of the NGA filed in accordance with 18 C.F.R. part 157;

(3) $300 for a Commission review of changes in producer rates schedules under section 4 of the NGA, filed in accordance with 18 C.F.R. § 154.94.

FERC Order 361

Second, we are asked to review FERC order 361, "Fees Applicable to Natural Gas Pipeline Rate Matters," accompanied by order 361-A, "Order Denying Rehearing," issued February 6, 1984, and April 20, 1984, respectively. Transcontinental Gas Pipeline Corporation (Transco) filed its petition to review on June 19, 1984, in the United States Court of Appeals for the Fifth Circuit. Interstate Natural Gas Association of America (INGAA) filed its petition to review these orders in the United States Court of Appeals for the District of Columbia Circuit on June 19, 1984. The Transco and INGAA appeals were transferred to this court pursuant to 28 U.S.C. § 2112(a) and consolidated with the petition to review FERC orders 360 and 360-A filed by Phillips on June 18, 1984.

FERC order 361 establishes fees for services and benefits provided to natural gas pipeline owners under the NGA and related authorities. The Commission also maintains this rule is authorized under the IOAA and established the following fees for pipeline rate matters:

(1) $2000 for Commission review of pipeline tariff filings for general changes in rates and for changes other than rates under section 4 or section 5 of the NGA, filed in accordance with 18 C.F.R. § 154.63;

(2) $2300 for Commission review of pipeline tariff filings that tract certain changes and costs under section 4 and section 5 of the NGA, filed in accordance with the 18 C.F.R. § 154.38 or pursuant to approved tariff provisions, orders of the Commission or settlement agreements with the Commission;

(3) direct billings for Commission review of petitions seeking advance Commission approval of rate treatment of research, development, and demonstration of expenditures filed in accordance with 18 C.F.R. § 154.38(d)(5).

FERC Order 394

Third, we are asked to review FERC order 394, "Fees Applicable to the Natural Gas Policy Act," accompanied by "Order Denying Rehearing," issued August 31, 1984, and October 31, 1984, respectively. The Phillips petition to review order 394 was filed in this court on December 27, 1984. INGAA's and Transco's petitions were filed in the United States Court of Appeals for the District of Columbia Circuit on December 28, 1984 and were transferred to this court pursuant to 28 U.S.C. § 2112(a).

FERC order 394 establishes fees for services and benefits provided under the Natural Gas Policy Act (NGPA), 15 U.S.C. §§ 3301-3432. Using the basic methodology for establishing fees with respect to services and benefits under orders 360 and 361, the Commission established the following fees under the IOAA:

(1) $6000 to apply for adjustments under section 502(c) of the NGPA, including exemptions from incremental pricing under section 206(d);

(2) $25 for Commission review of a jurisdictional agency determination;

> (3) $2000 to petition for approval for rates and charges for transportation of natural gas under 18 C.F.R. § 284.123(b)(2);
>
> (4) $800 for initial or extension reports filed in accordance with 18 C.F.R. §§ 284.106, 284.126, 284.148, and 284.163 for transactions authorized under Title 3 of the NGPA;
>
> (5) $1200 for requests for interpretation of the NGPA by the office of the General Counsel.

FERC Order 395

Fourth, we are asked to review FERC order 395, "General Activities Fees Rule," accompanied by "Order Denying Rehearing and Making Technical Corrections," issued on December 15, 1982, and October 31, 1984, respectively. On December 27, 1984, Phillips petitioned this court to review those orders and on December 28, 1984, INGAA and Transco individually petitioned the United States Court of Appeals for the District of Columbia Circuit to review the same orders. The petitions for review filed by INGAA and Transco were transferred to this court and consolidated with the Phillips appeal pursuant to 28 U.S.C. § 2112(a).

FERC order 395 establishes fees pursuant to the IOAA applicable to "general activities" of the Commission. The methodology followed in promulgating this rule was the same as in orders 360, 361, and 394. The initial fees, subject to subsequent annual adjustments, are as follows:

> (1) $4900 for a petition for issuance of a declaratory order other that one solely concerned with matters arising under Part I of the Federal Power Act;
>
> (2) $100 for requests for interpretation from the Office of Chief Accountants;
>
> (3) $3700 for a petition for review of a

Department of Energy (DOE) denial of adjustment if the amount in controversy exceeds $30,000; $600 of the amount in controversy is $10,000 up to and including $29,999; and $100 if the amount in controversy is $0 up to and including $9,999;

(4) $2900 for review of DOE remedial order if the amount in controversy exceeds $30,000; $600 if the amount in controversy is $10,000, up to and including $20,999; and $100 if the amount in controversy is $0 up to and including $9,999: and

(5) $5.60 per quarter hour for professional employees, and $2.40 per quarter hour for clerical employees for search time performed while responding to Freedom of Information Act requests.

This court's jurisdiction to consider these petitions for review arises under section § 717r(b) of the NGA, section 3416 of the NGPA, Rule 15 of the Federal Rules of Appellate Procedure and 28 U.S.C. § 2112.

The issues raised in the petitions for review can be summarized as follows: (1) whether FERC correctly held that it had the legal authorit under the IOAA to establish fees for various services it performs under the NGA and the NGPA; and (2) whether the Commission's procedures in establishing the fees constitute a lawful exercise of the Commission's authority.

I. SCOPE OF REVIEW

The scope of our review of agency actions is generally defined by section 706 of the Administrative Procedure Act (APA). 5 U.S.C. § 706. The scope of review under section 706 depends upon (1) whether the agency action is an adjudication or a formal rulemaking, in which case the standard of review is the substantial evidence standard, or (2) whether the agency action is an informal rulemaking, in which case the standard to be applied is the arbitrary and capricious standard. Compare 5 U.S.C. § 706(2)(A) and (E).

The Supreme Court has held that the APA establishes the maximum procedural requirements which the courts may impose on agencies. While additional procedural requirements may be imposed by Congress or an agency, reviewing courts are generally not free to impose them. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978). Thus, the scope of our review is governed by the APA's standards unless we find supplementary authority to the contrary.

There is nothing in the NGA, the NGPA, or the IOAA to lead us to conclude that in promulgating these rules the Commission engaged in anything other than an informal rulemaking procedure. An "informal rule" is one promulgated pursuant to section 553 of the APA. Motor Vehicle Manufacturers Ass'n v. State Farm, 463 U.S. 29, 41 (1983). Whereas none of these Acts define the scope of our review, "The Agency's action in promulgating such [rules] therefore may be set aside if found to be 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.' 5 U.S.C. § 706(2)(A)." Id. Contrary to the position advanced by some of the petitioners, the "substantial evidence" standard is not appropriate in reviewing informal rulemaking proceedings under the APA. Western Union Telegraph Co. v. FCC, 665 F.2d 1112, 1148 (D.C. Cir. 1981).

We should also note that our review of these FERC orders involves at least one question of law: the Commission's legal authority to promulgate these rules. Section 706 of the APA requires that, "[t]o the extent necessary for decision and when presented, the reviewing court shall decide all relevant questions of law." 5 U.S.C. § 706. While most courts accord some deference to an agency's determination of legal questions, the APA appears to require a de novo review of questions of law. Office of Communication of the United Church of Christ v. FCC, 707 F.2d 1413 (D.C. Cir. 1983).

II. STATUTORY AUTHORITY

In orders 360, 361, 394, and 395, the Commission relies upon the IOAA to establish fees for services and benefits it provides under the NGA or the NGPA. (R., Vol. I, p. 2; R., Vol. II, p. 1; R., Vol. III, p. 1; R., Vol. IV, p. 2.) The IOAA provides in part:

> [A]ny work, service publication, report, document, benefit, privilege, authority, use, franchise, license, permit, certificate, registration or similar thing of value or utility performed, furnished, provided, granted, prepared, or issued by any Federal agency ... to or for any person ... shall be self-sustaining to the full extent possible, and the head of each Federal agency is authorized by regulation ... to prescribe therefor such fee, charge, or price, if any, as he shall determine, in the case none exists, or redetermine, in case of any existing one, to be fair and equitable taking into consideration direct and indirect cost to the Government, value to the recipient, public policy or interest served, and other pertinent facts, and any amount so determined or redetermined shall be collected and paid into the Treasury as miscellaneous receipts....

31 U.S.C. § 483a, recodified without substantive change, 31 U.S.C. § 9701.

The principal interpretation of the IOAA is Bureau of the Budget Circular A-25 which states that a fee should be assessed against each identifiable recipient of a measurable unit or amount of Government service or property from which such recipient receives a special benefit. Specifically, Circular No. A-25 provides:

> 3. General Policy. A reasonable charge ... should be made to each identifiable recipient for a measurable unit or amount of Government service or property from which he derives a special benefit.
>
> a. Special services.
>
> (1) Where a service (or privilege) provides special benefits to an identifiable recipient above and beyond those which accrue to the public at large, a charge should be imposed to recover the full cost to the Federal Government of rendering that service. For example, a special benefit will be considered to accrue and a charge should be imposed when a Government-rendered service:
>
> (a) Enables the beneficiary to obtain more immediate or substantial gains or values (which may or may not be measurable in monetary terms) than those which accrue to the general public (e.g., receiving a patent, crop insurance, or license to carry on a specific business); or
>
> (b) Provides business stability or assures public confidence in the business activity of the beneficiary (e.g., certificates of necessity and convenience for airline routes, or safety inspection of craft); or
>
> (c) Is performed at the request of the recipient and is above and beyond the services regularly received by the same industry or group or of the general public (e.g., receiving a passport, visa, airman's certificate, or an inspection after regular duty hours).

Bureau of the Budget Circular No. A-25 (September 23, 1959) (emphasis added).

In National Cable Television Ass'n v. FCC, 415 U.S. 336, 342

(1974), the Supreme Court reviewed the IOAA and determined that agencies had authority to charge fees to recipients of "special benefits," but that agencies could not tax such recipients. In a companion case, the Court adopted as "the proper construction of the Act" Budget Circular No. A-25. Federal Power Commission v. New England Power Co., 415 U.S. 345, 351 (1974).

The parties agree that the IOAA and Circular A-25 set forth the relevant authority of the Commission to promulgate these rules. In addition, the parties agree that under the established precedent which construes the IOAA and Circular A-25, the transfer of a "special benefit" to an identifiable recipient is a prerequisite for establishing a lawful fee by an agency. While they rely on identical authority, the parties differ regarding on the meaning of the term "special benefits." In addition, they disagree on the effect that public versus private "benefits" have on an agency's authority to assess fees.

Petitioners argue that the NGA and the NGPA were enacted with the primary purpose of benefiting the public. They argue that the principal purpose of the NGA and the NGPA is to control the profits of enterprises that are perceived to have monopoly control over certain natural resources. The focus of the Acts is upon reducing rates, a function benefiting the public, not the regulated entity. Any "special benefits" conferred by the FERC under the NGA or the NGPA accrue to the general public not to the regulated industries. Therefore under the IOAA the cost of providing "special benefits" to the public cannot be assessed against and borne by petitioners. The Commission's response to this argument is that as long as a "special benefit" runs to the regulated entity, an agency may assess a fee, even if the public also benefits from the regulation.

Both the Commission and petitioners rely on *National Cable Television Ass'n v. FCC*, 554 F.2d 1094 (D.C. Cir. 1976) (*National Cable II*), *Electronic Industries Ass'n v. FCC*, 554 F.2d 1109 (D.C. Cir. 1976), *Mississippi Power & Light Co. v. NRC*, 601 F.2d 223 (5th Cir. 1979), *cert. denied*, 444 U.S. 1102 (1980), and our decision in *Nevada Power Co. v. Watt*, 711 F.2d 913 (10th Cir. 1983) to support their positions. We believe these cases which interpret and apply the IOAA are dispositive.

In *National Cable II*, petitioners there challenged the Federal Communication Commission's (FCC) assessment of an annual authorization fee to recover the costs associated with the processing of applications and tariff filings. After noting that under the rules of the FCC "[n]o cable television system shall commence operations or add ... to existing operations *unless it receives a certificate of compliance from the Commission*," 554 F.2d at 1101 (quoting 47 C.F.R. § 76.11(a)(1975)) (emphasis in original), the court held: "The issuance of a certificate of compliance under 47 C.F.R. § 76.11(a) is a service rendered by the FCC to the cable operators, and the agency is fully justified in seeking reimbursement of any expenses incurred in performing that service." *Id.* Under the court's reasoning, the FCC "service" is to permit the cable companies to operate at all.

In Electronic Industries Ass'n v. FCC, 554 F.2d 1109, (D.C. Cir. 1976), the companion case to National Cable II, the court elaborated upon the types of services provided to regulated entities for which an agency may assess a fee under the IOAA. While "service" is defined in Budget Circular No. A-25, supra, to include a "license to carry on a specific business" or "assuring public confidence in the business activity of the beneficiary," the court expanded "service" to include assisting beneficiaries in complying with a statute:

> [An agency] is entitled to charge for services which assist a person in complying with his statutory duties. Such services create an independent private benefit.... Although [the statute at issue] was enacted in order to protect the public against excessive or unreasonably discriminating or preferential charges, that result is only an incidental benefit from the service which is rendered by the agency, i.e., assisting the carriers in complying with the statute.

Id. at 1115.

In Mississippi Power & Light Co. v. NRC, 601 F.2d 223 (5th Cir. 1979), the court considered the precise issue raised by the petitioners in the case at bar. Petitioners in Mississippi Power challenged the NRC's entire fee schedule which is designed to recover the costs for processing applications, permits, and licenses as well as the costs arising from health and safety inspections and statutorily mandated environmental and anti-trust reviews. Petitioners argued that the NRC was without legal authority to assess any fee against an applicant because all of the NRC's activities furthered the "public interest" and therefore any charge assessed must necessarily be a tax.

After reviewing the legal precedents with respect to the IOAA, the court reasoned as follows: "A license from the NRC is an absolute prerequisite to operating a nuclear facility, and as such, is a benefit 'not shared by others members of society.' ... [T]o accept petitioners' argument would mean that no Federal agency could assess any fees, since all public agencies are constituted in the public interest." Id. at 229.

Finally, in Nevada Power Co. v. Watt, 711 F.2d 913 (10th Cir. 1983) we considered the validity of a fee assessed by the Department of the Interior to cover the cost of an environmental impact statement (EIS) when an application for right of way under the Federal Land Policy Management Act (FLPMA) triggers the National Environmental Policy Act (NEPA). In response to the utilities' argument that an EIS inures solely to the benefit of the general public, we held that because the EIS is a necessary prerequisite to the receipt by the applicant of a special benefit -- the grant of a right of way -- "Interior is not restrained by the doctrine laid out in National Cable and New England Power Co. from charging the full cost of such EIS to the applicant." Id. at 930.

The analysis in these cases disposes of petitioners' argument that the fees established by FERC are not authorized under the IOAA as a matter of law because the agency's services benefit the public. As these cases make clear, where an agency performs a service from which a regulated entity derives a "special benefit," it may charge a fee, even though the public also benefits. Moreover, the term "special benefit" is broadly defined to include even assisting regulated entities in complying with regulatory statutes. Electronic Industries Ass'n, 554 F.2d at 1115.

We hold the petitioners' "public benefit theory" does not preclude the FERC from assessing fees as a matter of law if "special benefits" to a regulated entity can be reasonably inferred from an agency's regulatory scheme. "Special benefits" are broadly defined and as long as they are identified the regulatory agency is authorized to assess fees for its costs in conferring these "benefits." As our discussion below will show, the FERC rules under review impose fees for services to the petitioners which under the FERC regulatory scheme will enable the petitioners to engage in their respective activities or to comply with the NGA or the NGPA. Thus, we cannot hold as a matter of law that FERC was without authority to establish fees for its services in promulgating orders 360, 361, 394 and 395.

III. RULEMAKING

Petitioners contend that the Commission acted improperly in several respects in promulgating the rules under review. We reiterate that we must uphold the Commission's action unless we find they were "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law." 5 U.S.C. § 706(2)(A). "Regulations must be set aside if they are arbitrary, capricious or an abuse of discretion, 5 U.S.C. § 706(2)(A), or if the agency has acted in excess of its statutory jurisdiction, 5 U.S.C. § 706(2)(C). Deference is accorded administrative regulations. Conway v. Watt, 717 F.2d (10th Cir.). This court has frequently applied the "rational basis" standard to agency actions." Wyoming Hospital Ass'n v. Harris, 727 F.2d 936, 938-39 (10th Cir. 1984). "A reviewing court may not substitute its judgment for an agency's and must affirm an agency's decision if a rational basis for it is presented." KCST-TV, Inc. v. FCC, 699 F.2d 1185, 1191 (D.C. Cir. 1983) (citing Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971)).

Petitioners contend that even if we deem the fees to be authorized under the IOAA, which we do, the Commission has failed to include evidence in the record to demonstrate that the Commission's services confer a benefit on the regulated entities. Our review of the record reveals that the Commission did identify the benefits it confers on fee payors when it promulagated FERC orders 360, 361, 394, and 395. (R., Vol. I., pp. 4-8; R., Vol. II, pp. 7-12; R., Vol. III, pp. 6-10; R., Vol. IV, pp. 4-8.) For example, in its Notice of Proposed Rulemaking for FERC order 360, the Commission noted that "[a] blanket small producer certificate under section 7 (c) of the NGA benefits the applicant by exempting the applicant from certain otherwise applicable filing requirements." (R., Vol. I, p. 6.)

Another benefit the Commission noted concerned the issuance of a Certificate of Public Convenience and Necessity: "A Certificate of Public Convenience and Necessity under Section 7(c) benefits the applicant by allowing the applicant to engage in the business of sale or resale of natural gas. Without a Certificate, a producer would be precluded by Section 7(c) of the NGA from selling natural gas for resale in the interstate market." Id. The Commission also stated that it was not including certain costs in determining its fees. "As mentioned above, the Commission is not proposing in this rulemaking to charge fees for other actions it takes relating to gas producers under the NGA. These actions include preliminary and formal enforcement of investigations, settlement and administrative litigation, news releases, litigation in the courts, and rulemakings." (R., Vol. I, p. 7.)

For each of the rules we are asked to review, the Commission identifies the benefits which it believes are conferred upon the regulated entity applying for the Commission's services. It appears from the record before us that the Commission gave careful consideration to the requirements of the IOAA. We hold that the Commission did not act arbitrarily or capriciously in demonstrating that its services confer a benefit on fee payors.

Petitioners next contend that the Commission is required to apportion the fees between regulated industries and the public; in other words, the fees must reflect the value of the service conferred on the regulated entities and the Commission must exclude from the fees expenses incurred to serve an independent public interest. We considered this very argument in Nevada Power, supra. Relying on the analysis in Mississippi Power, supra, we held that under the IOAA and controlling precedents, the full costs of providing a service to regulated entities can be assessed regardless of the benefit flowing to the public.

> The utilities argue that National Cable and New England Power Co. support their EIS argument, reasoning that an EIS primarily benefits the public and thus cannot be charged to an applicant. Interior disagrees, citing Mississippi Power.... In Mississippi Power, the Fifth Circuit examined both National Cable and New England Power Co., and then held that the NRC could "recover the full cost of providing a service to an identifiable beneficiary, regardless of the incidental public benefits flowing from the provision of that service." ... Accordingly, the court held that the Commission could recover from a license applicant the full costs of conducting environmental reviews required under NEPA "because they are a prerequisite to the issuance of a license.... The Commission must conduct these reviews before it can issue a license to an applicant; it is a necessary part of the cost of providing a special benefit to the licensee. In other words, it is 'incident to a voluntary act.'" ... It mattered not that there was an "obvious public benefit flowing from the preparation of these environmental reviews."

711 F.2d at 930 (citations omitted).

We again reject the argument that an agency may not assess the full cost of its services against a regulated entity. We uphold the amount of the Commission's fees in FERC orders 360, 361, 394, and 395.

Petitioners next contend that the Commission's rules unlawfully prohibit them from recovering the cost of these fees from the consumers by increasing statutory price ceilings. Petitioners argue that by refusing to permit cost recovery, the Commission has violated the "just and reasonable" standard of the NGA and has unlawfully reduced prices established under the NGPA. Petitioners maintain that they are entitled to recover prudently incurred costs necessary to perform price regulated services.

Under 15 U.S.C. §§ 3314(b)(2), 3316(c), and 3320(a)(2) the petitioners argue that they are entitled to have the ceiling prices increased to a just and reasonable level taking into consideration the Commission's new fees. The language of the NGPA makes it clear, however, that an increase in ceiling prices, for whatever reasons, is wholly within the discretion of the Commission. The Commission considered the petitioners' contention and rejected their arguments. (R., Vol. I, p. 305.) Under the circumstances, we hold that the Commission's decision refusing to permit the petitioners to pass the cost of the fees onto their consumers is not arbitrary, capricious or contrary to law.

Finally, petitioners contend that the "direct billing procedure" established by the Commission in orders 360, 361, 394, and 395 is unlawfully vague because the Commission failed to state specific standards for determining when a tariff filing will trigger "direct billing." The Commission describes the "direct billing procedure" in order 361, "Final Rule." This description also applies to the direct billing procedure provided in the other orders.

> [T]he Commission occasionally receives filings which are not average. These filings may be extensive in scope and present factual, legal, or policy issues of such complexity that the Commission may devote an extraordinary amount of time and effort to processing them. In addition, there may not be a truly representative average due to the small number of filings in a particular area.
>
> The standard fees established in this rule bear no reasonable relationship to the actual costs of processing those extraordinary and atypical filings.

> Moreover, if the costs of processing extraordinary filings are included in the costs associated with average filings, persons submitting average filings would be subsidizing those submitting the extraordinary filings. Therefore, in the case of an extraordinary filing, the Commission reserves the option of ordering a direct billing procedure at the beginning of processing the filing or at any time up to one year after receiving a complete filing. As discussed above, in the case of petition seeking advance Commission approval of rate treatment of research, development, and demonstration of expenditures, the Commission has decided to use direct billing for the entire fee category due to the unavailability of reliable data to establish an average fee.
>
> Under the direct billing procedure, the Commission will periodically bill the entity who submitted the filing for all the direct and indirect costs incurred by the Commission in processing the filing, unless a lesser amount is determined to be fair and equitable. The staff resources devoted to processing a filing resulting in a direct billing will be separately recorded and will not be included in the work-months associated with processing average filings. This final rule also requires the Commission to credit an applicant whose filing becomes subject to direct billing with any fee paid under this fee system.

(R., Vol. II, pp. 325-27.)

We hold that the "direct billing procedure" established in orders 360, 361, 394, and 395 is in accord with the IOAA and controlling law, and the Commission's procedure is not arbitrary or capricious. We have previously held that a regulation promulgated by an administrative agency charged with the administration of an Act (the IOAA) has the force and effect of law if it is reasonably related to administrative enforcement and does not contravene statutory provisions. United States v. Barnard, 255 F.2d 583 (10th Cir. 1958). Based on the scheme provided for processing and assessing fees for "average filings," we do not believe the direct billing procedure is a pretext for fees which the Commission "arbitrarily" decided not to establish.

Petitioners also raise several peripheral arguments which we find to be without merit. In summary, we hold that the Commission has the authority to recover the full costs of providing services to identifiable beneficiaries under the IOAA. We uphold the fees promulgated by the Commission as being consistent with this principle. We also hold that the Commission did not act arbitrarily, capriciously, or beyond legal authority in establishing the fees and promulgating orders 360, 361, 394, and 395 and in setting the fees at issue.

AFFIRMED.

Mr. **Fazio**. So the Phillips issue resolves the constitutional question? It's not a matter for legislation to resolve, is that correct?

Mr. **Sousa**. That's correct.

Mr. **Fazio**. Well I, at this point, might indicate that it might be useful to have a reconciliation process through the Budget Committee which might help you attain your goals. It might be worth getting me some information that might be used in the next couple of weeks.

Do you know what the Senate Budget Committee's attitude may be?

Mr. **McDonald**. No, I don't, sir. But we can get you some background sheets on it.

Mr. **Sousa**. And we can have our Congressional and Senate liaison staff look into that last question that you raised and provide you that information.

Mr. **Fazio**. Thank you. I have a number of questions on that issue.

Mr. **McDonald**. Could I add one comment, Mr. Chairman, on this?

Mr. **Fazio**. Sure.

Mr. **McDonald**. It would help us out in the legislation, not to tie the collection of the fees directly to the budget level of the FERC. To have the fees go to the Treasury would result in zero net cost. It's very difficult to run the Commission with a budget based on appropriations and fees because 68 percent of the money is payroll and the fees come in towards the end of the year.

Mr. **Fazio**. Well, I think this committee would want to retain its jurisdiction to fund you as well. So I think your suggestion is very well stated and certainly a very winning one for this committee.

Mr. **McDonald**. Thank you, sir.

Mr. **Fazio**. Mr. Chairman, I have one other area of inquiry. I can either defer or proceed with it now. It's up to you.

Mr. **Bevill**. Well, you may proceed with it if you wish.

Mr. **Fazio**. Thank you, Mr. Chairman. I want to ask questions about our intertie that we've discussed. I sort of tipped this off, and I saw some people scurrying around when I was talking with the Department administration. I'm interested, obviously, in making this upgrade and new intertie between WAPA in Northern California and Bonneville succeed.

And one of the concerns we have, of course, is that the FERC, perhaps without thinking about all the ramifications, might agree to a method of setting costs that would on the face of it help us with our obvious national problem of getting Bonneville to pay back more of the money that it's borrowed from the Federal Government at a faster rate, but overlook, perhaps without, as I say, fully understanding what the impact would be of those rates.

The fallout that would occur in California, if we found that it would be impossible to proceed on those expensive projects, in light of those costs. For example, there are many different ways to go about determining what the costs should be, and I know your Commission wrestles with these all the time. As I understand it, Bonneville, from 1981, '82 up to '85, '86, has gone from requesting a 2 mil increase up to 6.9 mils, to something close to 23 mils today. And obviously you haven't firmly, permanently agreed to these increases, but you have let them go into effect temporarily, as I understand it.

And the impact of this has been to make a number of people in California very nervous about the future of these rates; taking away from us a nonfirm power source that we think could be tremendously valuable to us and very, very useful to Bonneville and to the Federal Government itself.

We look at direct BPA incremental cost methods, the traditional method that we've been seen used before, amounting to about 6 mils. There could be a systems cost approach that you could use which would factor in, for example, the cost of the conservation programs, the support of the WPPSS project that could cost about 25 mils. There are also other market-based, much more difficult to determine, methods that could be used that provide almost any kind of justification for a full cost charge to California. Some would see it going as high as 30 to 35 mils potentially.

And we worry that this is going to be, in effect, killing the goose that potentially could lay the golden egg before that process of incubation even gets started. We really would advocate a share the savings approach which would roughly split the difference between the direct incremental costs at the low end and the market value cost at the high end, hoping that we could give BPA a benefit that would obviously accrue to the Federal taxpayer, but at the same time help the customers potentially. You have to come up with a lot of money—you know, this is not a Federal project, these interties and these upgradings of existing interties—and to help those customers, both the publicly owned and the privately held utilities in California, to come up with the costs of the transmission lines and the other facilities involved.

We're not going to have support from our State public utilities commission, frankly, if the costs get too high and we get committed down the road to pay off a very expensive multi-million dollar—I think it's in the neighborhood of $600 million dollars—facility, at the same time we lock ourselves into very high rates with very uncertain terms potentially in terms of deliveries from the northwest.

So, I'm doing this by way of lobbying you, I guess, to ask you if it is possible for you to keep in mind that we're going to lose capacity on these transmission lines, we're going to lose the will to proceed, we're going to lose the potential market for the northwest, and we're very concerned about that, if FERC's focus is strictly on getting the biggest dollar return. There is a bottom to this barrel, is what I'm saying, and it can be counterproductive if we take a very limited approach.

For example, Bonneville's recent rates have become such that Southern California Edison has reduced its capacity on the lines. And, for example, existing interties are only 40 percent of capacity in January, 70 percent in February. Now, as we have hydro opportunities—and our storms have that positive side to them—we are going to take our opportunities to get that power elsewhere and at much cheaper costs. And, in general, our cost to produce alternative power in California is very, very quickly going to be exceeded by the rates that we fear you may impose on us. That's going to undermind this whole concept which is so beneficial to both regions and to the country.

With that rather lengthy assertion, I'd be interested in your response.

Mr. SOUSA. Congressman Fazio, I have the same concerns as you because I, too, come from California. In the past, the Commission has stated that under the applicable statutes it must determine whether BPA's proposed rates have been designed, first, with regard to the recovery of the cost of generation and transmission of the nonfirm energy. We must encourage the most widespread use of BPA power. We must provide the lowest possible rates to consumers consistent with sound business principles, and, finally, in a manner which protects the interest of the United States in amortizing its investments in the BPA projects within a reasonable period. And those are the things that we have said, and this Commission is very concerned about looking at those in BPA's rates. We do have limited jurisdiction over BPA's rates, however.

Mr. FAZIO. Well, we'd like for the record what your understanding is of your authorities in this regard. I want to point out some anomalies. They're selling to their own customers power at the cost of 3 to 7 mils. They're talking about rates of three times, four times, potentially five times that in California.

We wonder what the equity of that is. We're certainly going to be contributing to the solution of their problem. It's everybody's problem, after all. But we don't want to be paying such exorbitant rates that it just doesn't make possible the capitalization of the intertie. I think we would be willing to pay rates for firm long-term contracts, say 20 years or so. But when you get much more than that on nonfirm power, you become very concerned about what the overall impact would be in the long-term on our ratepayers.

One thing that does trouble me, as I understand it, FERC has been delaying making some decisions in this area for up to five years now. And I think we need some certainty. And I'm wondering when you could be giving us your final answer.

Mr. SOUSA. Congressman Fazio——

Mr. FAZIO. We worry about that, of course, but we all seek it.

Mr. SOUSA [continuing]. There is a case pending before us, Congressman Fazio, on the status of Bonneville Power Administration's 7K rate case. That initial decision of Administrative Law Judge Miller has not yet come to the Commission for a final decision. And I, in answering Senator Daniel Evans in an appearance before the Senate earlier, have stated to him that I would make this a top priority in bringing this case before the Commission for decision. And I expect to do that very, very shortly.

Mr. FAZIO. Well, we appreciate that. We hope you can expedite that. Senator Evans and I may have different views on what ought to be the result of it, I think it's fair to say. But let me simply conclude by saying that I think we are concerned that FERC pay a role here of accommodating the interest of both areas and not simply focussing on the needs of Bonneville to recoup as much revenue as they possibly can to deal with what is obviously, to this committee, a very extreme problem.

We want you to try to make their request less extreme if possible and certainly adjudicate them in a way that would modify what we think are extreme demands. I think we need to see flexibility there, particularly in the nonfirm rate structure. We really want to advocate—and I'll place in the record for your benefit some of the more detailed description of this share the savings approach, which we think is essential to recognizing that there are certain fixed costs that you have to take into consideration that have to be built into these rates, but at the same time that the floating value of avoided costs also has to be considered. That is part of the market that we're dealing with.

And if people up north tend to ignore that, or if you tend to ratify that ignorance, then I think we have a problem that could put this whole thing into a cocked hat. If it doesn't happen through the restrictions under the tax bill, it certainly could happen here and it would be tragic, it really would. This committee has done a lot of work in this area, and it would be tragic for the whole region and to the whole country if we allow that to happen.

So, I want to thank you for listening to me, and express my appreciation to the committee for their patience.

Mr. Bevill. The Chair recognizes Mrs. Boggs.

Mrs. Boggs. Thank you, Mr. Chairman. Mr. Sousa, do you believe that Congress should enact legislation to remove wellhead price controls from those categories of natural gas which remain regulated under NGPA?

Mr. Sousa. Yes, Congresswoman Boggs. Speaking for myself, I think that it should. We have seen the benefits of lower oil prices putting pressure on gas prices, and also with partial deregulation the downward movement of these prices. And we feel—at least I personally feel, speaking for myself and not for the full Commission—that if legislation is enacted which would totally regulate it, it would be beneficial.

Mrs. Boggs. Do you have any reading of how the majority of the Commission would feel?

Mr. Sousa. If I could hazard a guess, I would think that the majority feels the same way.

Mrs. Boggs. Could you tell me what the status of the Middle South cases is?

Mr. Sousa. I believe—yes, they are before the courts. And speaking from memory—I boned up on this last night—the question of our preemption of Federal over States' rights, that is before the 5th Circuit, and that was decided on the 14th of February. And as far as how we allocated the costs, that is before the Circuit Court of Appeals for the D.C. Circuit, and this has been set for briefings, and arguments have been set for March 24th of this month.

Mrs. Boggs. Thank you very much. What are the Commission's plans and goals for recruiting qualified women and minorities for management and technical responsibilities? And since the Commission has a large legal staff, have special efforts been made to recruit female and minority law student graduates?

Mr. Sousa. I'm happy to say, Congresswoman Boggs, that the Commission has made good progress in placing women and minorities in decision making positions. The Commission's goal is that 25 percent of all professional GS-9 and above new hires be women. We exceeded this goal in 1985 when 36 percent of new hires at GS-9 and above were women.

During the first quarter of fiscal year 1986, 30 percent of new hires were women at GS-9 and above. During 1985, promotions for women employees at GS-9 and above totalled 36.8 percent, while minorities at those grade levels were promoted at a 19.9 percent rate.

We've also made an effort to have women represented at the higher levels. At the present time, 12.8 percent of the occupied senior executive service positions and 16.1 percent of the GS/GM-13 to 15 positions are occupied by women. FERC's percentage of women in the Senior Executive Service is far greater than the Government-wide figure of 7.6 percent. And the number of women in grade GS/GM-13 to 15 in FERC is up from last year.

The FERC has also two minorities in Senior Executive Service positions, which is 5.1 percent, as compared to the Government-wide rate of 0.9 percent. And finally, minorities make up 15.5 percent of the FERC's GS/GM-13 to 15 work force.

And if I may add a little humor to this, Congresswoman Boggs, you see before you a minority. I've been told that I qualify for the Hispanic minority category. I have not used that in anyway, and I'm not going to as Acting Chairman. And if I become Chairman, then you would have a minority at the highest level of the FERC.

Mrs. BOGGS. Thank you very much for a very splendid report. Yes, Mr. Satterfield.

Mr. SATTERFIELD. If I might address also the latter part of your question dealing with recruitment of attorneys. We've had a very aggressive program in the last two years of recruiting attorneys. This past year we went to ten law schools around the country, two of those, I'm happy to report, were in your home State of Louisiana, Loyola and Tulane.

We have hired five students for our program this coming year; two in our summer intern program and three from our—for our permanent hire program in August from Tulane. And one of those three permanent hires is a Black female. So, we're very pleased with the number of minorities, the number of women we're getting. About a third, a little more than a third of our attorneys that we're hiring into the general counsel's office are women.

Mrs. BOGGS. Thank you very much. And thank you, Mr. Chairman.

Mr. BEVILL. Very good. Mr. Watkins, you have a couple of questions now.

Mr. WATKINS. Yes, sir.

Mr. BEVILL. And we have—let's see, we have ten minutes to get over there to vote. And I think I'm just going to turn the gavel over to you and let you have it.

Mr. WATKINS. We have ten minutes. It will only take me about five minutes or so.

Mr. BEVILL. Well, you've got five minutes and then you've got five minutes to get over there.

Mr. WATKINS. All right.

Mr. BEVILL. So I'm leaving it with you. And, Mr. Chairman, you're off to a mighty good start. We appreciate—Chairman O'Connor did a good job, but we can already tell you're going to do a good job, too. And we'll be working with you and we appreciate all of you.

Mr. Sousa. Thank you, Mr. Chairman.

Mr. Bevill. So, if Chairman Watkins will excuse Mrs. Boggs and I, we'll leave.

Mr. Watkins. Mr. Chairman, I'm glad to be chairman for five minutes. I appreciate that. And if I might—because of the time, I'll move real quick. I am deeply concerned, and I'd like to ask your personal attention to a couple of matters. But I've got three projects in my area that I want to bring them to your attention.

Hugo Dam hydro. We've been studying hydroelectric, this committee has been working very diligently to try to get hydro on. We have a Hugo hydro dam in our area. We've applied for a license there. I think the project numbers are number 3555 and 8074. The first license was filed the 24th of June 1983 and the second was filed the 3rd of February '84. It just seems like an extra long period of time, and we haven't received any kind of answer.

On project 8074 FERC requested some supplemental data, and it was submitted—the information was submitted by the applicant to FERC on the 21st of June 1985. The applicant received no communication from FERC until the 10th of February 1986, at which time FERC requested that information submitted in February '84 be resubmitted.

Is this normal procedure? And if it is, I hope you'll see if we can get something corrected down there.

Mr. Sousa. I'd say offhand that it would not be normal procedure for it to last that long. I would be very happy, Congressman, to look into those specific dockets, the ones that you just mentioned and give you an answer for the record.

Mr. Watkins. That's the best answer I can get. I'd like for you to look into it, if you would, personally and see if we can move those.

Mr. Sousa. I will do that, sir.

Mr. Watkins. Because you know and I know you can't maintain commitments for financing on projects over long periods of time. And we know that the preliminary period, permit period, on a project is normally two years, and this is a period of time to study the applicant—it looks like FERC can get an answer out in less than two years. And I'd like to ask your personal attention on that.

Mr. Sousa. I will certainly do that. We've taken note of the two dockets that you mention and we will look into that, and I'll give you an answer for the record.

Mr. Watkins. I will be waiting for you to help me on that, because I've people standing by the phone for a long time. Regarding projects 355 and also another number, 3657, I received a copy of a letter to the applicant from FERC dated 26th of March 1985. And in this letter from Mrs. Kristina Nuggard, FERC indicated that because agreements between two cities listed applicants and a private company, there was some question, or might not be eligible for municipal preference.

Now, that is probably understandable, or that's not what the urgency is. They'd like just a decision to be made because there are other applicants there also. And I know there's some question about the eligibility of the applicants, but I think everyone concurs that we've got to have a decision. They just can't keep on keeping on waiting and waiting, and there's also other entities there that probably meet the municipal preference and need to have a decision.

So, could I ask you to—because we're just trying to find out for over two years whether the eligibility is there. And, of course, I'd like to ask, you know, since one of them relates there, they speed up of trying to find out if we can get a license worked out.

Mr. **Sousa**. We certainly will look into that. One of the problems we've had, Congressman, is that we are torn between two positions here. One where there is the position that we should expedite all of these licenses, and then on the other hand, we have others that would challenge the issuance of these licenses on various grounds, including environmental. So what we've tried to do is take a middle of the road approach so that when we issue these licenses, we are not held up in court. Sometimes——

Mr. **Watkins**. I can assure you——

Mr. **Sousa**. [continuing] It's better to take a little more time and not then get held up in court.

Mr. **Watkins**. Well, I can assure you that FERC hasn't taken the procedure to expedite it, because it's been down there turning yellow——

Mr. **Sousa**. I will certainly look into all of the cases that you've brought to our attention and will give you an answer on those.

Mr. **Watkins**. I will stand by the phone, or sit by the phone. I'll stand and wait——

[Laughter.]

Mr. **Sousa**. I think we'll give you an answer fast enough so that even if you're standing——

Mr. **Watkins**. I've got five minutes and I've got one more very important issue—Middle Creek Dam hydroelectric power. It's a small hydropower project that has installed a capacity of 5 megawatts or less. They've asked FERC for an exemption in order to—under the Federal Power Act. There's been a lot of publicity that FERC didn't want to move in that direction. The project was issued a preliminary permit, and on February 24, 1984. And I understand the application was rejected by FERC, an appeal was filed by the applicant. According to FERC guidelines, the applicant has received no response from FERC despite the fact that a considerable amount of time has passed. And I'd like to ask the status of this application.

And my staff member can give you that exact number here after a while if necessary, but we need an answer on that. People have put up thousands of dollars down there and it's a little five megawatt that they've asked here. And it looks like they're going to lose everything they've put up. It looks like we could make a decision on that.

Could you check on that?

Mr. **Sousa**. Yes, sir.

Mr. **Watkins**. Well, I have to go vote. The rest of the questions that I have will be provided.

Mr. **Sousa**. If we have any questions, Congressman, we will be in touch with your staff to get all the information we need to give you an answer on all those that you've raised.

Mr. **Watkins**. I'd appreciate that. If necessary, have my staff over there. Thank you very much, and I'm going to run. The balance of the questions in record and we adjourn until 1:00 Monday. Thank you.

[The following questions and answers were provided for the record:]

CONSTITUTIONALITY OF REGULATORY ACTIVITIES

Mr. Bevill. Mr. Chairman, recent court decisions have brought into question the constitutionality of regulatory activities such as those conducted by FERC. Is it your opinion that FERC is a constitutionally valid regulatory agency?

Mr. Sousa. I appreciate that the recent U.S. District Court decision on the Gramm-Rudman-Hollings Act, which is currently pending before the U.S. Supreme Court, has raised the question of the constitutionality of regulatory agencies. Neither the Commission nor I have examined this question as it relates to the FERC. In addition, to the best of my knowledge, the question is not currently before other courts in cases in which the Commission is a party. Accordingly, I do not have an opinion on this question.

LEGISLATIVE ASSUMPTIONS

Mr. Bevill. Aside from annual charges legislation, is your FY 1987 budget request predicated on any changes in existing law such as natural gas decontrol or oil pipeline rate deregulation?

Mr. Sousa. No, the only legislative change that our budget request contemplates is the fees and annual charges legislation.

PRIORITIZING PENDING RULEMAKINGS

Mr. Bevill. What progress has the Commission made in prioritizing and completing action on pending rulemaking proposals?

Mr. Sousa. As is standard practice at the Commission, the former Chairman issued a list of priority rulemakings for 1985. That list contained 30 rulemaking actions. The Chairman's instructions were to allocate resources only to those rulemakings on the priority list. Because of intervening circumstances and new issues, however, the Chairman and the Commission added new dockets to the list during the year, such as the Order No. 436 rulemaking and the Electric Notice of Inquiry. The Commission has also reassessed the need for certain rulemakings. Therefore, of 37 rulemaking actions assigned priority in 1985, 29 rulemakings have been completed or are scheduled to be completed in the very near future. On March 4, 1986, in my capacity as Acting Chairman, I requested comments from the Commissioners and Office Directors to establish new rulemaking priorities for 1986. Responses were received on March 18, 1986.

PENDING LEGISLATION TO REDUCE FERC WORKLOAD

Mr. Bevill. What legislation is now pending in Congress that would reduce FERC's workload?

Mr. Sousa. Legislation is now pending in Congress that would repeal the incremental pricing provisions of the Natural Gas Policy Act, remove remaining wellhead price controls on natural gas supplies, deregulate oil pipeline transportation, and clarify procedures for the relicensing of existing hydroelectric projects. Enactment of such measures would ultimately reduce the Commission's workload.

Mr. Bevill. What legislation would increase FERC's workload?

Mr. Sousa. Pending legislation that would require hearings in advance of natural gas pipeline rate increases as well as a pending bill that would constrain the Commission's flexibility to include construction work-in-progress costs in utility rate bases could increase the Commission's workload.

CASE BACKLOGS

Mr. Bevill. How do the Commission's backlogs at this time compare to your backlog projections made last year?

Mr. Sousa. In February 1985, there were 1,479 cases backlogged. In February of this year, the number had been reduced to 1,292. The reduction represents nearly a 13 percent decrease in backlogged cases. We are comparing actual figures here, not projections, as the 13 percent represents an accurate and quantifiable assessment of our improvement in case processing. For comparison, I'd like to point out that our backlog has been reduced by 50 percent since the end of FY 1979.

In FY 1985, the Commission reduced the pending workload from 4,290 to 3,983 filings, excluding the wellhead pricing regulatory programs under NGPA. Data available for the first five months of FY 1986 depicts about a 5 percent decrease in pending workload or almost 200 cases with an additional 6 percent decrease projected by the end of FY 1986.

Mr. Bevill. What areas are behind last year's projections?

Mr. Sousa. As of the end of February, the only area behind last year's projections is Gas Producer Certificates due to a large number of abandonment filings. Hydropower has experienced a small increase of less than 1 percent due to a large number of filings in the first quarter of FY 1986 to meet the December 31, 1985, filing requirements of the Energy Security Act. This trend is not expected to continue.

Mr. Bevill. What areas are ahead?

Mr. Sousa. Through improvements in productivity most program areas reflect a significant decrease in pending workload from FY 1985. For example, Gas Producer Rates have decreased by 7.5 percent; Gas Pipeline Certificates have decreased by 11 percent; Gas Pipeline Rates have decreased by about 9 percent; and Oil Pipeline Regulation workload has decreased by almost 20 percent.

FEE REVENUE

Mr. Bevill. What has been the Commission's experience with the application of user fees in FY 1985 and FY 1986?

Mr. Sousa. In FY 1985, four fee rules were in effect, and on November 4, 1985 (FY 1986) two additional fee rules became effective in the Natural Gas Pipeline Certificate and Electric Rate Regulation areas. The two new rules will result in an additional $1.5 million in revenue. Furthermore, a proposed rulemaking in the Oil Pipeline area is being developed. The fees were not updated during FY 1985 due to a court challenge. On the advice of our Office of General Counsel, all existing fees were updated this year using the most current cost and workload data. The revised fees became effective on March 6, 1986. On March 10, 1986, the court issued its opinion upholding the Commission's authority to collect fees.

Mr. Bevill. This year's budget justification estimates that FY 1987 fee revenues will total $78.8 million. Given the Commission's poor track record in accurately predicting revenue levels, what assurance can you offer that this year's estimates will prove any more reliable than they have in the past?

Mr. Sousa. Our FY 1987 revenue estimate hinges on passage of new fee and annual charges legislation. If that legislation does not pass, our revenue will be in the $52 million range. Similarly, previous years' revenue estimates included the assumption of the passage of new legislation. Failure to enact that legislation was the principal reason that the FERC did not reach the previous revenue estimates.

Mr. Bevill. According to FY 1986 justifications, FERC should collect $56 million in fees during FY 1986 even without new legislation. Yet your FY 1987 justification estimates that FY 1986 revenues will reach only $49.4 million. What accounts for the downward revision?

Mr. Sousa. The downward revisions in revenue estimates are primarily due to a court case, Phillips Petroleum Company, et.al., which challenged FERC's basic authority to set fees. The Commission delayed revising fees and establishing new fees while the case was being studied. After review, the General Counsel's office recently advised that the Commission could continue establishing and revising fees. On March 10, the court upheld the Commission's authority to collect fees. A second factor is that the new and revised fees are not as high as we had estimated they would be last year. This is mostly attributable to increased staff productivity in the Commission. FERC fees are based on actual costs. As staff becomes more efficient, costs of processing individual workload items are reduced, and fees are lower as a result of the increased efficiencies.

GRAMM-RUDMAN

Mr. Bevill. How will the 4.3% automatic across-the-board budget cuts mandated by the Gramm-Rudman Deficit Reduction Act affect FERC in FY 1986?

Mr. Sousa. The FERC's budget has been reduced by $4.1 million under the terms of the sequestration order.

Mr. Bevill. What programs, projects and activities will be most severely affected if the cuts go into effect on March 1?

Mr. Sousa. The Commission implemented cost savings efforts at the beginning of FY 1986 in anticipation of passage of the Deficit Reduction Act so we should be able to weather this year with minimal program impact.

Mr. Bevill. What steps will the Commission take to make the required savings?

Mr. Sousa. We will achieve these reductions through reduced staffing, administrative savings, and reduced contractual efforts.

Mr. Bevill. What would be the impact on FERC operations if far more severe budget reductions approaching 25% are imposed pursuant to the Gramm-Rudman Act in FY 1987?

Mr. Sousa. A large cut of 25 percent would have a severe effect. Since the primary resource of the FERC is its people, representing 69 percent of our costs, that is what would have to give. We would have to resort to a hiring freeze and furloughs. These actions would affect all FERC programs: we would see increases in pending workload, in backlogged cases, and, generally, more time spent by the public waiting for our regulatory decisions.

A specific area of concern is in the Dam Safety Program. I am concerned that a cut of 25% would seriously impair our ability to perform adequate and timely inspections -- not only of the existing 2,080 dams but also the additional 250-300 projects that will come on line in the next two years.

Currently more than 50 percent of our budget is returned to the Treasury in the form of fees and annual charges the following year. A cut of this magnitude will reduce the revenues that would be collected in FY 1988, since we base our fees on our actual costs for the previous year. An FY 1987 budget cut of $25 million would mean about $12 million less revenue in FY 1988.

Mr. Bevill. Would FERC be able to continue to fulfill its statutory responsibilities if cuts of that magnitude are required?

Mr. Sousa. It would be extremely difficult to maintain our efforts in fulfilling our statutory responsibilities since severe spending cutbacks, including furloughs of staff, would be required.

Mr. Bevill. Which of your regulatory programs would be most severely disrupted?

Mr. Sousa. These actions would affect all FERC programs; we would see increases in pending workload, in backlogged cases, and, generally, more time spent by the public waiting for our regulatory decisions.

Mr. Bevill. How would the Commission effect the required savings?

Mr. Sousa. Since the primary resource of the FERC is its people representing 69 percent of our costs, that is what would have to give. We would have to resort to a hiring freeze and furloughs. At the same time all categories of expenditures and programs would have to be reduced.

NATURAL GAS DECONTROL LEGISLATION

Mr. Bevill. Do you believe that Congress should enact legislation to remove wellhead price controls from those categories of natural gas which remain regulated under the NGPA?

Mr. Sousa. Yes, speaking for myself and not the Commission. I believe that the increased competition and falling prices we have observed in natural gas markets since partial decontrol are evidence of the benefits to consumers which would result from comprehensive deregulation of natural gas prices. Although no comprehensive wellhead natural gas decontrol legislation has been submitted for my review, I prefer free market solutions rather than government regulation for the allocation and pricing of energy resources.

CUMULATIVE IMPACT ASSESSMENT

Mr. Bevill. Last year Chairman O'Connor testified that he was not convinced that either NEPA or section 10 of the FPA requires FERC to use a cumulative approach in reviewing the environmental impact of proposed hydro projects. Is the Commission yet fully convinced that existing law precludes environmental review on a case-by-case basis?

Mr. Sousa. I am not convinced that existing laws like NEPA and the FPA preclude environmental review on a case-by-case basis. Also, the Commission, in two cases, Weeks Falls and Twin Falls, issued hydropower licenses for projects located within areas initially targeted for CIAP review. In issuing the licenses, the Commission indicated that it would consider proceeding with license approval on a case-by-case basis, rather than waiting to act pursuant to the results of the CIAP, where all parties and agencies who originally raised concerns about potential adverse cumulative impacts agree that a particular project will not contribute to any adverse cumulative environmental impact and should be processed on an individual basis.

Mr. Bevill. What is the legal basis for your conclusion?

Mr. Sousa. A U.S. Supreme Court decision, Kleppe v. Sierra Club indicates that an agency has some flexibility to act on an individual project fully covered by an impact statement. I recognize that this may not release an agency from considering a cumulative impact analysis of the remaining pending proposals. That might eliminate the agency's ability to evaluate different courses of action on proposals pending before it. The same considerations with regard to preserving options would apply to the Commission's responsibility under Section 10(a) of the FPA to license projects that are best adapted to a comprehensive plan to preserve and utilize a waterway in the public interest.

Thus, while neither NEPA nor Section 10(a) mandates the use of a particular type of procedure, such as the CIAP, the statutes and the case law appear to require the agency to take into account in some manner the effect on the environment of clustered hydropower applications. The Commission clearly has flexibility in determining the precise manner in which it carries out this responsibility· for example. in delimiting the geographic scope of such an assessment.

What we face is formulating a methodology that will withstand judicial review and at the same time permit action on development applications as quickly as possible.

Mr. Bevill. How far has FERC progressed in completing CIAP for the four river basins targeted thus far for cluster review?

Mr. Sousa. The Snohomish River, Owens River and Salmon River basins are currently being reviewed under the CIAP. Thus far. in the Snohomish River Basin, the first two phases of the CIAP. the Geographic Sort and Resource Sort, and the Environmental Impact Statement scoping meetings are completed. The Multiple Project Assessment phase is complete and the Draft EIS preparation is under way. with a target completion date of May 1986. The Final EIS and the Licensing Review phase for the Snohomish River Basin are targeted for September and November 1986. respectively.

For the Owens River Basin, both the Geographic and Resource Sort phases have been completed. The impact matrix document, part of the Multiple Project Assessment phase, for this basin is in preparation with a Draft EIS due out in May 1986. The Final EIS for the Owens River Basin is targeted for September 1986 with the Licensing Review phase targeted for October 1986.

In the Salmon River Basin, both the Geographic and Resource Sort phases have been completed. Both the Matrix Technical sessions, part of the Multiple Project Assessment phase, and the EIS scoping sessions were conducted during the week of January 27, 1986. A Draft EIS is set for August 1986. The Final EIS is targeted for January 1987 with the Licensing Review phase to be completed during February 1987.

An announcement was made on November 20, 1985, that the fourth CIAP study would be started in the Ohio River Basin. This study was put on hold by former Chairman O'Connor prior to his departure, to allow the new Chairman the opportunity to decide the future course of action.

Mr. Bevill. Will CIAP for these basins be completed in time for developers to meet the deadlines needed to take advantage of the 11% hydro investment tax credit?

Mr. Sousa. Concerning the 11% hydro investment tax credit, there are no qualifying applicants within the Snohomish River, Owens River, and Salmon River basins.

Mr. Bevill. Is the Commission continuing to delay final action on hydro applications in all river basins where there has been a request for CIAP review by outside parties?

Mr. Sousa. No. the Commission is not delaying final action on hydro applications in all river basins where there has been an allegation of cumulative impacts. Basins and projects are continuously reviewed to assess the allegations, and where the conclusion of no potential for cumulative impacts can be reached. case-specific processing continues. Where the analysis indicates that there is a potential for cumulative impacts, the basin is classified in terms of the type of cumulative impact analysis required and then proceeds as resources allow.

Mr. Bevill. How much longer will developers have to wait before the Commission makes a final decision as to which river basins must undergo such review?

Mr. Sousa. To date. 39 river basins have been identified where more than one pending application exists and the issue of cumulative impacts has been raised. Determining the appropriate analyses for these 39 basins entails documenting proposed and existing hydroelectric development within a basin. and identifying target resources coupled with reviewing comments received from Federal and state resource agencies and the public concerning specific projects. I am submitting for the record the list of 39 river basins.

Attachment .

January 24, 1986

The following table lists the basins where more than one pending application for license exists and the issue of cumulative impacts has been raised prior to or during the comment period for the CIAP (March 1985).

Table 1

River basin	State	Pending license applications
Alleghany	PA-NY	5
N.F. & M.F. American	CA	6
S. FK. American	CA	5
Arkansas	AR-OK-KS-MO-CO	3
Black (Also Moose)	NY	11
Clearwater	ID	4
Connecticut	CT-MA-NH-VT	29
Cowlitz 1/	WA	1
Deschutes	OR	8
Dungeness	WA	2
N. Fork Feather	CA	22
Green	KY	2
Hamma Hamma	WA	4
Henrys Fork	ID	2
Kentucky 2/	KY	1
Kings	CA	2
Lehigh	PA	3
Merrimack	MA-NH	17
Mono Lake	CA	4
Monongahela	PA-WV-MD	7
Muskingum 2/	OH	1
Nooksack	WA	12
Owens	CA	11
Ohio	IL-OH-IN-KY-WV	28
Penobscot	ME	3
Pit	CA	4
Rogue	OR	3
Salmon	ID	15
Upper San Joaquin	CA	3
Schuylkill	PA	2
Skagit	WA	15
Upper Snake	ID-WY	23
Snohomish	WA	5
Trinity	CA	2
Williamette	OR	5
Yakima	WA	4
Yuba	CA	6
Upper Miss. R. Mainstem	MO-IA-IL-WI-MN	3
Ohio River Mainstem	IN-IL-OH-KY-WV	7
Totals 39		290

1/ There is a pending exemption application in the Cowlitz River Basin that impacts non-fish and wildlife resources.

2/ The Kentucky River and Muskingum River are tributaries of the Ohio River Basin.

HYDRO LICENSING

Mr. Bevill. How many publicly owned utilities now hold FERC hydro licenses?

Mr. Sousa. A total of 200 licenses have been issued to utilities owned and operated by local government agencies.

Mr. Bevill. How many relicensing cases are now pending before FERC?

Mr. Sousa. There are 49 pending relicense applications.

Mr. Bevill. In how many such cases are there competing municipal applications?

Mr. Sousa. Nine of the 49 pending relicense applications involve competing municipal applications.

Mr. Bevill. Does the Commission have data indicating the number and location of customers served by the competing applicants in these relicensing cases?

Mr. Sousa. For six of the nine competing applicants, the Commission has data indicating the number and location of customers served. I am providing for the record the following list which shows the number and location of the customers served by the competing applicants.

NUMBER AND LOCATION OF CUSTOMERS SERVED

	Project Number	Applicant	Customer Type and Numbers		General Service Area
1.	2745-000	City of Santa Clara	Res Com Indl Others	34,000 5,112 1,048 341	Santa Clara, CA
	137-000	Pacific Gas & Electric	Res Com Indl Agric Others	3,111,601 369,665 1,064 98,321 13,473	Northern half of California
2.	4040-000	City of Bountiful	Res Others	9,648 741	Bountiful, UT
	596-000	Utah Power & Light	Res Com Indl Others	427,410 41,680 8,134 1,618	Most of Utah and South Eastern Idaho
3.	7263-000	City of Vernon	Res Com Indl Others	33 1,421 571 72	Vernon, CA
	1388-000	Southern California Edison	Res Com Indl Agric Others	2,943,085 291,013 33,481 21,571 36,153	Southern half of California
4.	2747-000	City of Bountiful	Res Others	9,648 741	Bountiful, UT
	1744-000	Utah Power & Light	Res Com Indl Others	427,410 41,680 8,134 1,618	Most of Utah and Southeast corner of Idaho
5.	3223-000	Sacramento Municipal Irrigation District	Res Com & indl Others	313,291 36,739 1,172	Sacramento, Galt, Charmichel, Citrus Heights, Elk Grove, Fair Oaks, Orangevale Rancho Cordova, North Highlands, and Arden, CA

	Project Number	Applicant	Customer Type and Numbers	General Service Area
	1962-000	Pacific Gas & Electric	Res 3,111,601 Com 369,665 Indl 1,064 Agric 98,321 Others 13,473	Northern half of California
6.	2865-000	City of Shawano	Res 3,512 Com 545 Indl 54 Others 9	Shawano, Wescott Richard, Belle Plaine and Waukechon, WI
	710-000	Wisconsin Power & Light	Res 274,253 Com 35,019 Indl 511 Others 941	S. Western quarter of Wisconsin
7.	4309-000	Tuolumne County Water District	Information is not available	
	1061-000	Pacific Gas & Electric	Res 3,111,601 Com 369,665 Indl 1,064 Agric 98,321 Others 13,473	Northern half of California
8.	6930-000	June Lake Public Utility District	Information is not available	
	1389-001	Southern California Public Utility District	Information is not available	
9.	8243-000	Wisconsin Public Power, Inc. System	Information is not available	
	1966-003	Wisconsin Public Service Corp.	Res. 263,362 Com 29,121 Indl 107 Other 415	Northeast Wisconsin

Mr. Bevill. What is the status of the Merwin Dam case now before the courts?

Mr. Sousa. On October 22, 1985, a panel of the United States Court of Appeals for the District of Columbia Circuit reversed the orders of the Commission in the Merwin Dam case. Pacific Power & Light Co., 25 FERC ¶ 61,052 (1983) and 25 FERC ¶ 61,290 (1983). The panel held that the Commission had erred in ruling that a municipal preference does not apply against an "original licensee" of a project when the project is relicensed and that in determining which is the better applicant on relicensing the Commission can consider consumer costs which would flow from the transfer of the project from the original licensee to the municipal applicant. On January 16, 1986, the D.C. Circuit vacated its October 22, 1985, order and granted rehearing en banc of the case. This case will be argued before the court sitting en banc on March 31, 1986, at 9:30 a.m.

Mr. Bevill. Would not the investor-owned utilities holding existing licenses be more secure if FERC's Merwin Dam decision is upheld by the courts?

Mr. Sousa. Yes, in the Merwin Dam case, the Commission reversed its previous interpretation that the Federal Power Act extends municipal preference to hydropower relicensing cases and held that municipalities do not have a relicensing preference against the original licensee of a project. Moreover, the Commission held that its choice among competing applicants for a relicense should, in taking account of the public interest, include the economic impacts of granting a new license to someone other than the original licensee.

Mr. Bevill. Do you support enactment of S. 426, the hydro relicensing legislation reported by the Senate?

Mr. Sousa. Enactment of legislation to modify existing law relating to hydroelectric relicensing would be helpful to the Commission's evaluation of applicants for the projects now or imminently facing relicensing proceedings. To the extent that its relicensing provisions are consistent with the Commission's decision in the Merwin Dam case, Pacific Power & Light Company, 25 FERC § 61,052 (1983), S. 426 represents a workable approach to such issues as criteria by which applications are judged, preference, and economic impacts that may result from project transfers.

Mr. Bevill. Would you recommend any changes in the bill as reported?

Mr. Sousa. The Commission would generally benefit from the augmented enforcement authority proposed in S. 426. However, the Commission's General Counsel has identified provisions that might be clarified to assure that the enforcement provisions strengthen the Commission's authority, as seems to be the intent, rather than dilute existing authority, which might be the effect.

The Office of General Counsel would be prepared to brief you or your staff orally on these potential areas for clarification.

PRIVATIZATION OF POWER MARKETING ADMINISTRATIONS

Mr. Bevill. The Administration's FY 1987 budget contains a proposal to sell power marketing administration facilities for generating and transmitting hydro power in an effort to further reduce the federal deficit. Do you support this proposal?

Mr. Sousa. Speaking for myself, I would be inclined to be in favor of this proposal. However, I have not had an opportunity to examine in depth the ramifications of this proposal on the Commission. One matter staff has raised, if Congress considers the proposal, is what ratemaking authority should remain with the Commission.

CONSTRUCTION WORK IN PROGRESS

Mr. Bevill. Discuss the D.C. Circuit Court of Appeals ruling on CWIP.

Mr. Sousa. The Courts found that, for the most part, the Commission had adequately supported and justified the inclusion of CWIP in rate base. However, it vacated the rule on the ground that the Commission had not adequately considered potential anticompetitive effects of a generic policy of including CWIP in rate base.

Mr. Bevill. What has been the Commission's response to the Court's order?

Mr. Sousa. The Commission is assembling a number of procedures and substantive options for addressing those concerns in a final action. Meanwhile, on February 27, 1986, the Commission issued an interim rule outlining procedures for electric utilities filing for CWIP in rate base. Under the interim rule, utilities would still be allowed to file rates that include up to 50 percent CWIP in rate base. However, the interim rule makes provision for consideration of two anticompetitive situations cited by the Appeals Court.

MIDDLE SOUTH CASES

Mr. Bevill. What is the status of the Middle South cases?

Mr. Sousa. The U.S. Court of Appeals for the Fifth Circuit recently remanded to the District Court the preemption question; that is, whether the Commission's allocation of Grand Gulf costs preempts local agencies' authority to examine those costs. [*NOPSI v. City of New Orleans*, No. 85-3654.] The U.S. Court of Appeals for the D.C. Circuit is considering the appeal of the merits of the Commission's allocation choice. [*Mississippi Industries v. FERC*, No. 85-1611]. That appeal is currently being briefed; the Court has established an expedited schedule with arguments set for March 24.

ELECTRICITY NOTICE OF INQUIRY

Mr. Bevill. What is the status of FERC's notice of inquiry into wholesale electricity transactions?

Mr. Sousa. The FERC has divided the notice of inquiry in Docket No. RM85-17-000 into two phases. A notice was issued in Phase I on May 30, 1985, to explore possible changes in the regulation of transmission and coordination services.

The Commission has received written comments from participants in the proceeding. An on-the-record public conference was held in 1985 on September 18 and 19 at which time participants made oral presentations to the Commission and the Commission made inquiry of the participants as to their comments.

A notice of inquiry was issued in Phase II on June 28, 1985, seeking comments regarding how the regulation of requirements service, especially as it relates to pricing and risk allocation, affects efficiency and how it might be changed to encourage greater efficiency. Written comments were submitted to the Commission and another on-the-record public conference was held on January 22 and 23, 1986.

The Commission and the staff are currently reviewing the record compiled to date in the two phases in order to determine an appropriate course of action with regard to specific issues.

BULK POWER MARKETING EXPERIMENT

Mr. Bevill. What conclusions has the Commission drawn from its bulk power marketing experiment?

Mr. Sousa. The Commission has not formally reached any conclusions about the Southwest Bulk Power Market Experiment. However, the Commission has received a report from the Rand Corporation that examines whether the experiment produced changes in competition and economic efficiency. Rand's evidence finds that the experiment market became more competitive in 1984, the first year of the experiment, when compared to the baseline year of 1983. With respect to efficiency gains that can be obtained from bulk power trading, Rand finds some evidence that "the experiment increase[d] the likelihood of potential gains being realized." Since several policies implemented in the experiment are now being examined in the notice of inquiry relating to wholesale electricity transactions the Commission will probably consider Rand's results as one of many inputs to the NOI policy review process.

BPA RATE REVIEW

Mr. Bevill. In November 1984, ALJ David Miller issued an initial decision finding that BPA had grossly undercharged for energy sold to California. What is the status of that case (EF81-2011-003 and EF82-2011-003)?

Mr. Sousa. Concerning the status of the initial decision by Judge Miller on BPA's nonfirm energy rates in Docket Nos. EF81-2011-003 and EF82-2011-003, the staff is currently working on a draft opinion for the Commission. The case involves a number of complex technical and legal issues concerning the proper basis for BPA's nonfirm rates.

Mr. Bevill. Does FERC have a general policy in such cases of ensuring benefits to both sides -- cheaper power to the receiving utility coupled with adequate revenues for the generating region?

Mr. Sousa. Concerning the Commission's general policy about BPA's rates for nonfirm energy, the Commission has previously decided that in reviewing BPA's nonfirm rates the applicable statutes require that it must determine whether BPA's proposed rates have been designed: to recover the cost of generation and transmission of the nonfirm energy; to encourage the most widespread use of BPA power; to provide the lowest possible rates to consumers consistent with sound business principles; and that they were designed in a manner which protects the interests of the United States in amortizing its investments in the BPA projects within a reasonable period.

A number of important issues in Docket Nos. EF81-2011-003 and EF82-2011-003 concern the appropriate allocation of costs between the purchasers of nonfirm energy outside the Pacific Northwest and BPA's purchasers inside the Pacific Northwest. The Commission will be required to decide many of these issues for the first time. Thus, the decision in the dockets is of vital interest and importance to the parties involved.

FY 1986 APPROPRIATION LANGUAGE

Mr. Bevill. Has the Commission experienced any difficulty with the appropriation language contained in the FY 1986 Act?

Mr. Sousa. No, the Commission has not experienced any operational difficulty with the FY 1986 appropriation language nor do we anticipate any.

FY 1987 BUDGET REQUEST

Mr. Bevill. Provide for the record an appropriations account baseline table for fiscal year 1987, indicating the fiscal year 1987 requests (a) made for each program by the Commission to OMB, and (b) included in the President's proposed budget?

Mr. Sousa. The Commission's FY 1987 requests, to the Office of Management and Budget (OMB) and the Congress, by program, are outlined below. The change from the request to OMB to the President's budget is a reduction of $3.0 million. The FY 1986 appropriation is provided for comparison purposes.

DISTRIBUTION BY PROGRAM OF THE FERC'S FY 1987 OMB AND PRESIDENT'S BUDGET REQUESTS (DOLLARS IN THOUSANDS)

	FY 1986 Appropriation	FY 1987 OMB Request	FY 1987 President's Budget
Natural Gas	$ 46,231	$ 45,516	$ 45,174
Hydropower	27,990	31,411	29,343
Oil Pipeline	3,782	4,527	4,139
Electric Power	20,849	20,625	20,423
Total	$ 98,852	$ 102,079	$ 99,079

Mr. Bevill. Provide for the record a list by appropriations account of any anticipated fiscal year 1987 requests for supplemental appropriations.

Mr. Sousa. The Commission does not anticipate submitting any supplemental budget requests to the Congress during fiscal year 1987.

Mr. Bevill. Provide for the record a list of any assumptions in the President's proposed budget that require legislation? In each case: provide a detailed statement of purposes; provide the proposed language (if available) or indicate if, or when, the Administration intends to transmit such language; and indicate whether, in the Administration's judgement, such legislation would be sought from the Energy and Natural Resources Committee or as a rider on an appropriation act?

Mr. Sousa. The only assumption underlying the Commission's budget for FY 1987 that will require legislation is our proposal to extend explicit authority to assess fees and to collect additional annual charges. Annual charges, currently applicable only to the hydropower program, would be extended to our oil pipeline, natural gas pipeline, and electric power programs. Additionally, the FERC would be given explicit authority to set fees for particular services and/or filings instead of relying on the nonspecific authority to do so under the Independent Offices Appropriations Act of 1952. This proposal, which had been submitted to the 98th Congress but never introduced, was resubmitted to the Congress on May 8, 1985, and was subsequently modified slightly based on discussions between FERC's Office of the General Counsel and the staff of the Senate Energy and Natural Resources Committee in August 1985. I am supplying for the record a copy of the Commission's May 8, 1985, letter of transmittal citing a detailed statement of purpose, the original legislative proposal, and the August 1985 revision.

The purpose of the proposed legislation is to reduce the direct cost of energy regulation to the taxpayer through recovery of a greater share of the costs of regulatory services provided by the Commission to energy companies that operate under a Commission license, certificate, or other authorization. This proposal, if passed, would result in approximately $26.5 million in additional revenue in FY 1987 and about $50 million additional annually in FY 1988 and future years.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

May 8, 1985

Honorable George Bush
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

Enclosed is proposed legislation "to authorize the Federal Energy Regulatory Commission (FERC) to collect fees and charges for services, benefits, privileges and authorizations granted in administering its regulatory programs, and for other purposes."

The Purpose of the Legislation

The purpose of the bill is to make clear the Commission's authority to reduce the costs of energy regulation to the taxpayer by recovering a greater share of those costs, in the form of annual charges and user fees, from energy companies that operate under Commission license or authorization. The Commission now has explicit authority to impose annual charges on hydropower companies under section 10(e) of the Federal Power Act (16 U.S.C. § 803(e)). The proposed bill would give it comparable authority over natural gas companies, electric utilities, and oil pipelines.

Title V of the Independent Offices Appropriations Act of 1952 (IOAA) (31 U.S.C. § 9701) states the sense of Congress that regulatory licenses, privileges or other authority should be self-sustaining to the extent possible, and, to that end, empowers agencies to collect fees and charges. However, the Commission's fees and charges under the IOAA have been challenged in the courts. Questions have been raised about the Commission's authority to recoup expenses associated with essential services and benefits provided in the regulatory environment in which energy companies hold operating privileges. The proposed bill is designed to supplement the Commission's authority under the IOAA by specifying that the Commission can assess and collect annual charges and user fees to reimburse the United States for regulatory costs not otherwise recovered under existing law. The annual charge for each company would be computed on the basis of the company's share of total energy deliveries or sales in a fiscal year. Annual charges and user fees could also be based on other methods the Commission found fair and equitable. Similar authority to impose annual charges on regulated entities (apart from the Commission's own authority over hydropower companies) is now vested in the Securities and Exchange Commission under section 31 of the Securities Act of 1934 (15 U.S.C. § 78ee).

Cost and Budgetary Data

Enactment of this legislation will contribute toward reducing the Federal deficit. The chart below depicts actual and estimated fee revenue from FY 1984 through FY 1986. The FY 1986 projection assumes that the proposed new annual charges legislation will be passed by Congress in FY 1985 and implemented by the Commission in FY 1986.

	Fee Revenue (Dollars in millions)		
	Actual	Estimated	
	FY 1984	FY 1985	FY 1986
Existing Authority	$39.9	$41.3	$56.1
New Legislation	.....	.....	$10.0
Total Applied to Appropriation	$39.9	$41.3	$66.1
Other Revenues:			
Headwater Benefits	4.4	8.2	6.6
Other Payments	4.3	5.4	6.8
Total Other Revenues	8.7	13.6	13.4
Total Collections	$48.6	$54.9	$79.5

By FY 1988, the additional estimated revenue attributable to this proposed annual charges legislation should be approximately $40,000,000 annually.

Sincerely,

Raymond J. O'Connor

Raymond J. O'Connor
Chairman

Enclosure

Enclosure

A BILL

To authorize the Federal Energy Regulatory Commission to collect fees and charges for services, benefits, privileges, and authorizations granted in administering its regulatory programs, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Federal Energy Regulatory Commission shall be authorized to collect charges and fees and to retain and use the monies collected for its operating expenses as described in this Act.

SEC. 2(a) Definitions. For purposes of this Act --

(1) "adjusted costs" includes the anticipated direct and indirect costs to the government of administering a program during a fiscal year minus fees anticipated to be collected for services or benefits rendered under the program during that fiscal year under section 2 of this Act or title V of the Independent Offices Appropriations Act of 1952 (31 U.S.C. §9701);

(2) "natural gas company" has the same meaning as that term has under section 2(6) of the Natural Gas Act (15 U.S.C. §717a(6))

(3) "public utility" has the same meaning as that term has under section 201(e) of the Federal Power Act (16 U.S.C. §824(e)); and

(4) "jurisdictional gas deliveries" means the total volume of natural gas that is sold by a natural gas company to any person, except another natural gas company, and excludes the natural gas that is sold to a person who later resells the natural gas in interstate commerce.

(b) Annual Charges To Be Assessed.

(1) Each natural gas company that has an effective certificate of public convenience and necessity under section 7(c) of the Natural Gas Act (15 U.S.C. §717f(c)), shall pay to the United States a reasonable annual charge in an amount fixed by the Commission to reimburse the United States for the adjusted costs of administering the Natural Gas Act (15 U.S.C. §§717 *et seq.*). The annual charge for each natural gas company shall be computed based on its proportional share of the total jurisdictional gas deliveries during the previous fiscal year or on a method for apportioning the adjusted costs that the Commission determines to be fair and equitable.

(2) Each public utility shall pay to the United States a reasonable annual charge in an amount fixed by the Commission to reimburse the United States for the adjusted costs of administering parts II and III of the Federal Power Act (16 U.S.C. §§824-25r), except for the regulation of cogeneration and small power production under sections 201 and 210 of that Act (16 U.S.C. §§824 and 824i). The annual charge for each public utility shall be computed based on its proportional share of the total of the kilowatt hours transmitted under interchange power agreements and the gross jurisdictional kilowatt hours sold by all public utilities during the previous fiscal year or on a method for apportioning the adjusted costs that the Commission determines to be fair and equitable.

(3) Each common carrier subject to regulation by the Commission shall pay to the United States a reasonable annual charge in an amount fixed by the Commission to reimburse the United States for the adjusted costs of administering the regulation of oil pipelines. The annual charge for each common carrier shall be computed based on its proportional share of the total jurisdictional barrel miles transported during the previous fiscal year or on a method for apportioning the adjusted costs that the Commission determines to be fair and equitable.

(c) Fees To Be Assessed. In addition to its authority under title V of the Independent Offices Appropriations Act (31 U.S.C. §9701), section 10(e) of the Federal Power Act (16 U.S.C. §803(e)), and section 2(b) of this Act, the Commission may fix and collect fees and charges for applications, requests, grants or approvals of licenses, abandonments, curtailments, exemptions, rate or tariff authorizations, or any other authorization under its jurisdiction to reimburse the United States for the services or benefits rendered by the Commission under its regulatory programs and for costs incurred by the Commission to serve an independent public interest. Fees and charges under this section shall be computed based on methods that the Commission determines by rule to be fair and equitable.

(d) Waiver. The Commission may, by rule or order, waive all or part of an annual charge or fee assessed under this Act.

SEC. 3. Any monies collected by the Commission may be retained and used for operating expenses up to the amounts contained in appropriations acts when these monies are not earmarked for specific programs of other departments and agencies, notwithstanding the requirement in other law that monies be paid into the Treasury as miscellaneous receipts.

SEC. 4. This Act takes effect on October 1, 1985.

Revised Bill, August, 1985

A BILL

To authorize the Federal Energy Regulatory Commission to collect fees and charges for services, benefits, privileges, and authorizations granted in administering its regulatory programs, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Federal Energy Regulatory Commission shall collect charges and fees and to retain and use the monies collected for its operating expenses as described in this Act.

SEC. 2(a) Definitions. For purposes of this Act --

(1) "adjusted costs" means the actual direct and indirect costs to the government of administering a program during a fiscal year minus fees collected for services or benefits rendered under the program during that fiscal year under section 2 of this Act or title V of the Independent Offices Appropriations Act of 1952 (31 U.S.C. §9701);

(2) "interstate pipeline" has the same meaning as that term has under section 2(15) of the Natural Gas Policy Act of 1978 (15 U.S.C. §3301);

(3) "public utility" has the same meaning as that term has under section 210(e) of the Federal Power Act (16 U.S.C. §824(e));

(4) "pipeline carrier" has the same meaning given such term in section 10102 of title 49, Unites States Code; and

(5) "interstate gas deliveries" means the total volume of natural gas that is sold or transported by an interstate pipeline to any person, except another interstate pipeline.

(b) Annual Charges To Be Assessed.

(1) Each interstate pipeline that has an effective certificate of public convenience and necessity under section 7(c) of the Natural Gas Act (15 U.S.C. §717f(c)), shall pay to the United States a reasonable annual charge in an amount fixed by the Commission to reimburse the United States for the adjusted costs of administering the Natural Gas Act (15 U.S.C. §§717 et seq.) and section 311(a) of the Natural Gas Policy Act. The annual charge for each natural gas company shall be computed based on its proportional share of the total interstate gas deliveries during the previous fiscal year or on a method for apportioning the adjusted costs that the Commission determines to be fair and equitable.

(2) Each public utility shall pay to the Unites States a reasonable annual charge in an amount fixed by the Commission to reimburse the United States for the adjusted costs of administering parts II and III of the Federal Power Act (16 U.S.C. §§824-25r), except for the regulation of cogeneration and small power production under sections 201 and 210 of that Act (16 U.S.C. §§824 and 824i). The annual charge for each public utilty shall be computed based on its proportional share of the total of the kilowatt hours transmitted under interchange power agreements and the gross jurisdictional kilowatt hours sold by all public utilities during the previous fiscal year or on a method for apportioning the adjusted costs that the Commission determines to be fair and equitable.

(3) Each oil pipeline carrier subject to regulation by the Commission shall pay to the United States a reasonable annual charge in an amount fixed by the Commission to reimburse the United States for the adjusted costs of administering the regulation of oil pipelines. The annual charge for each oil pipeline carrier regulated by the Commission shall be computed based on its proportional share of the total barrels delivered during the previous fiscal year or on a method for apportioning the adjusted costs that the Commission determines to be fair and equitable.

(c) Fees To Be Assessed. In addition to its authority under title V of the Independent Offices Appropriations Act (31 U.S.C. §9701), section 10(e) of the Federal Power Act (16 U.S.C. §803(e)), and section 2(b) of this Act, the Commission may fix and collect fees and charges for applications, requests, grants or approvals of licenses, abandonments, curtailments, exemptions, rate or tariff authorizations, or any other authorization under its regulatory jurisdiction to reimburse fully the United States for the services or benefits rendered by the Commission under its regulatory programs and for costs incurred by the Commission. Fees and charges under this section shall be computed based on methods that the Commission determines by rule to be fair and equitable.

(d) Waiver. The Commission may, by rule or order, waive all or part of an annual charge or fee assessed under this Act.

SEC. 3. Any monies collected by the Commission may be retained and used for operating expenses up to the amounts contained in appropriations acts when these monies are not earmarked for specific programs of other departments and agencies, notwithstanding the requirement in other law that monies be paid into the Treasury as miscellaneous receipts.

SEC. 4. This Act takes effect on October 1, 1985.

INTERVENORS

Mr. Bevill. Has FERC ever paid fees to intervenors?

Mr. Sousa. No, it is forbidden by our appropriation language.

Mr. Bevill. Has FERC ever been required to pay fees to intervenors?

Mr. Sousa. Yes, recently the FERC has been ordered to pay the legal costs of the Washington Urban League and the Papago Tribal Utility Authority who intervened in FERC proceedings. The courts awarded $18,000 and $17,083.75, respectively, under the terms of the Equal Access to Justice Act.

Mr. Bevill. Discuss the circumstances of that requirement?

Mr. Sousa. While the courts awarded payments to these intervenors under the Equal Access to Justice Act, the Commission is prohibited from paying intervenor costs by sections 305 and 502 of the Energy and Water Development Appropriations Act. We consulted with GAO and were told that unless we had unrestricted funds -- which we do not have -- we would have to seek approval from Congress to pay the judgements.

Mr. Bevill. In how many other cases now before FERC have intervenors participated?

Mr. Sousa. Intervenors have participated in all of the 170 cases currently pending before the Commission's administrative law judges.

GRACE COMMISSION RECOMMENDATIONS

Mr. Bevill. The Grace Commission issued several reports a number of years ago on agency management and operations. Could you tell the Committee what action you have taken to address the recommendations of the Grace Commission and what the results have been?

Mr. Sousa. Of the nine Grace Commission recommendations, only five could be directly addressed by the Commission; the other four would require new legislation. The areas included improvements to our management information system, use of generic rulemakings, improving the formal proceedings process, reducing regulatory burden, and improving the procedures in issuing Commission Orders. Changes have been made in all five instances and have been in place for as long as two years in some cases.

IMPACT OF GRAMM-RUDMAN-HOLLINGS REDUCTIONS

Mr. Bevill. Provide a summary table of the Gramm-Rudman-Hollings sequestrations, by appropriation account and a copy of agency guidance with regard as to how reductions were to be made.

Mr. Sousa. In response to the requirements of the Gramm-Rudman-Hollings Act, we reviewed each program's requirements and the potential effects after a reduction in resources. We determined that the absorption of the reduction could be achieved through a prorated decrease to each program. The reductions in the programs will be realized through maintaining reduced staffing levels, reducing contractual efforts, and achieving administrative savings. I am submitting for the record a table providing, by program, the base levels of the FY 1986 appropriation, including the $3,284,000 approved for the 5% pay reduction, the sequestration effects, and the revised levels.

FEDERAL ENERGY REGULATORY COMMISSION
EFFECTS OF SEQUESTRATION BY PROGRAM
(DOLLARS IN THOUSANDS)

Program	FY 1986 Appropriation	Sequestration	Revised FY 1986 Appropriation
Natural Gas Regulation	$46,231	$-1,922	$44,309
Hydropower Regulation	27,990	-1,163	26,827
Oil Pipeline Regulation	3,782	- 157	3,625
Electric Power Regulation	20,849	- 867	19,982
Total Commission	$98,852	$-4,109	$94,743

EMPLOYMENT LEVELS

Mr. Bevill. Provide a summary table showing employment levels for the agency in the same format that appears in House Report 99-195 on page 8.

Mr. Sousa. I am submitting for the record a table providing the FERC's actual FTE usage for FY 1985, authorized for FY 1986, and requested for FY 1987.

FERC EMPLOYMENT LEVELS

[Staff Years]

FY 1985			FY 1986			FY 1987 Proposed		
Federal	Non-Federal	Total	Federal	Non-Federal	Total	Federal	Non-Federal	Total
1,627	---	1,627	1,659	---	1,659	1,659	---	1,659

APPROPRIATION SUMMARY

Mr. Bevill. Provide a summary table showing the breakdown of appropriations by capital and operating expenses in the same format that appears in House Report 99-195 on page 7.

Mr. Sousa. The Federal Energy Regulatory Commission has no capital and construction expenditures; our entire fiscal year 1987 request of $99,079,000 is for operating expenses. A summary table is provided for the record.

OPERATING AND CAPITAL EXPENDITURES
FISCAL YEAR 1987
FEDERAL ENERGY REGULATORY COMMISSION

	Fiscal Year 1987 Request
Operating expenses	$99,079,000
Capital and construction	0
Total	$99,079,000

OUTLAY PROJECTIONS

Mr. Bevill. Provide a summary table showing the prior three years estimated outlays and actual outlays, by appropriation account and a table showing the FY 1987 budget authority request and outlays associated with that request for the next five years. Provide this by appropriation account.

Mr. Sousa. The table provided below cites the estimated outlays based on the Commission's budget request and, for comparison, the actual outlays for the approved appropriation.

COMPARISON OF ESTIMATED AND ACTUAL OUTLAYS
(DOLLARS IN THOUSANDS)

Fiscal Year	1983	1984	1985
Budget Request	$92,500	$94,582	$100,677
Outlay Estimate	90,000	93,314	99,400
Appropriation	79,665	89,582	97,304
Actual Outlays	77,879	89,006	94,318

The FY 1987 request includes $99.1 million for budget authority and $97.3 million for outlays. The outlays associated with the FY 1987 budget authority request are $92.2 million in FY 1987 and $6.9 million in FY 1988. The $6.9 million outlay estimate represents payments in FY 1988 of FY 1987 obligations.

BONNEVILLE POWER ADMINISTRATION RATE REVIEW

Mr. Fazio. Since passage of the Northwest Power Planning Act of 1980 FERC has reviewed power rate increases proposed by the Bonneville Power Administration for export to California. Partly because BPA has yet to settle upon its approach to rates, FERC has not given final approval to any of these rate increases, although they have been implemented temporarily.

An Administrative Law Judge for FERC has said that BPA's rates need not necessarily be strictly cost-based, throwing wider open an already difficult question about the standards on which BPA should base its charges. In particular, there is a need to establish the basis on which BPA's non-firm power export rates will be set. When does FERC plan to make a decision in this regard? What more information is needed before a decision can be made?

Mr. Sousa. This proceeding is the first to come before the Commission under section 7(k) of the Pacific Northwest Electric Power Planning and Conservation Act of 1980. Initial questions are therefore presented concerning the Commission's new functions under the Regional Act and the appropriate substantive and procedural standards to apply. The case also involves a number of other complex factual, legal, and policy issues of first impression for the Commission. BPA's combined production system is a complex and unusual one in which substantial hydroelectric resources with storage capacity are combined with various thermal and nuclear generating resources. It is currently anticipated that a draft opinion in the BPA 7(k) rate case will be ready for consideration by the Commission in the spring.

Mr. Fazio. Can FERC communicate to BPA the concern that its rates are becoming too extreme; that more flexibility is needed in its non-firm rate structure; that a "share the savings" approach is not only a reasonable way to handle power over the existing interties but that such an approach would be essential to give California the incentive to construct a third intertie?

Mr. Sousa. The Commission ordinarily speaks through its orders. The Commission has found in a prior order that its jurisdiction over BPA's proposed rates for sales of non-firm energy to purchasers outside the Pacific Northwest includes questions of rate design. U.S. Dept. of Energy - Bonneville Power Administration, 27 FERC ¶ 61,251 at 61,474 (1984). One of the issues raised by the parties in the 7(k) proceeding on BPA's NF-1 and NF-2 rates that is currently before the Commission for decision is whether BPA may appropriately use a "share the savings" rate design for its sales of non-firm energy outside the Pacific Northwest. It should be noted that BPA did not actually propose a "share the savings" rate in connection with either its NF-1 or NF-2 rate schedules, so that it did not actually use such a rate during the period that either rate schedule was in effect.

Mr. Fazio. Can FERC take into account the low non-firm rates BPA wants to charge its own customers when determining the fairness of the rates it seeks to impose upon others?

Mr. Sousa. The Commission has previously noted that the Northwest Power Act establishes four criteria to be applied to the question of whether rates proposed by BPA for sales of non-firm energy outside the Pacific Northwest are lawful. These are whether BPA has designed the rates having regard to the recovery of the cost of generation and transmission for the non-firm energy; whether the rates have been designed so as to encourage the most widespread use of BPA power; whether BPA has provided the lowest possible rates to consumers consistent with sound business principles; and whether BPA has designed the rates in a manner which protects the interests of the United States in amortizing its investments in BPA projects within a reasonable period. U.S. Dept. of Energy - Bonneville Power Administration, 27 FERC ¶ 61,251 at 61,475-76 (1984). In the same order, the Commission found that its jurisdiction over BPA's non-firm energy rates includes questions of cost allocation as well as rate design.

Mr. Fazio. How is it consistent for BPA to try to impose upon California market-based rates when it argues for itself that it should pay only cost-based rates? If BPA claims that it is charging cost-based rates for both internal and export customers, how does it explain the enormous discrepancy in the actual tariffs?

Mr. Sousa. The question of the appropriate relationship among the various rates that BPA uses and BPA's costs is a complex and difficult one. I understand that Commission staff is presently engaged in developing an analysis and recommendations on this question. Until I have had a chance to review the results of this analysis, and to the extent the merits of a pending matter are involved, I cannot respond definitely to this question. However, it is also my understanding that the presiding judge in the pending section 7(k) case has evaluated BPA's rates based on cost recovery rather than market factors.

Mr. Fazio. How does FERC justify departing from costs for one set of customers when the other set is only imposing minimal cost-based rates on itself?

Mr. Sousa. The appropriate relationship between costs and rates for various different groups of customers is a complex question that arises both in rate filings under the Federal Power Act and in rate filings by Federal power marketing agencies under the various power marketing statutes. In arriving at a decision on a particular question, the Commission must concern itself with the facts of the case and the language of the applicable statute. Accordingly, I cannot comment further, especially with respect to the merits of the 7(k) proceeding which is a pending matter.

USER FEES

Mr. Fazio. Where is FERC's request for user fee authority now?

Mr. Sousa. On March 8, 1985 former FERC Chairman Raymond O'Connor transmitted to Congress draft legislation to clarify the Commission's authority to reduce the costs of energy regulation to taxpayers by recovering a greater share of those costs, in the form of annual charges and user fees, from energy companies that operate under Commission license or authorization.

Mr. Fazio. What are the prospects for Congressional action in 1986?

Mr. Sousa. Both the House and Senate Budget Committee reports accompanying the First Budget Resolution for FY 86 included enactment of FERC user fees legislation among their assumptions supporting budget-cutting reconciliation instructions to the authorizing committees with oversight responsibility for FERC activities.

The House Energy and Commerce Committee concurred with the Budget Committee's recommendations and proposed a modified version of FERC's user fees proposal for inclusion in H.R. 3500, the House Budget Committee's omnibus reconciliation legislation reported on October 3, 1985. The Energy and Commerce Committee version would grant FERC authority to assess and collect annual charges from interstate natural gas pipelines, interstate oil pipeline carriers and public utilities, effective at the beginning of FY 86.

Alternative language proposed by the House Public Works and Transportation Committee would prohibit the Commission from assessing or collecting any such charges from interstate natural gas pipelines or oil pipeline carriers, except for those charges assessed or collected pursuant to previously existing law. Both committees' versions were included in the House reconciliation bill, with final resolution to await conference with the Senate.

The Senate Energy and Natural Resources Committee did not support such FERC annual charges legislation and, consequently, no such legislation was included in the Senate reconciliation bill.

Prior to adjournment of the 1st Session of the 99th Congress, Senate and House conferees on the omnibus reconciliation bill, H.R. 3128, agreed to drop FERC annual charges legislation from the conference report.

I understand that House Energy and Commerce Committee Chairman John Dingell has indicated that his committee would be taking a second look at FERC's user fees proposal in 1986. In view of the continued Congressional emphasis on the need for deficit reduction measures, I hope that the FERC user fees proposal will receive renewed consideration in the 2nd Session of the 99th Congress.

Mr. Fazio. Chairman Sousa's testimony delivered in the Senate on February 18 indicates that FERC would recover a "greater share" of its regulatory service costs if its proposals pass, and that by 1988 its proposals would result in approximately $50 million in additional revenue. Yet FERC's total budget request is $99 million. Would there remain any portion of the Commission's costs which the Treasury would have to support?

Mr. Sousa. The Commission's revenue collection data included projections based on both expanded annual charges and on user fees. Although the Commission has not been given annual charges authority as we requested, we are continuing to collect user fees. There is a significant difference, however, in the principles on which each is based. Annual charges allow the collection of total program costs while fees assessed to each applicant permit only the collection of costs incurred in providing a service or benefit to that applicant. As long as FERC relies on fees to collect its costs, it will never collect its total appropriation. There are numerous Commission activities such as enforcement actions, audits, and formal hearings in which the beneficiary is not clearly identified. These costs must be absorbed by the Commission.

If annual charges legislation for natural gas pipelines, electric utilities, and oil pipelines were enacted, the Commission would probably allow some categories of exemption, similar to municipal exemptions under the hydropower annual charges program. These amount to about $1.0 million annually. It is not possible to estimate what part of the Commission's costs would be uncollectable if an expanded annual charges program was approved and fees were also collected; however, because of the benefits rate dictated by OMB Circular A-76, this agency could realize full-cost recovery by FY 1988.

Mr. Fazio. If so, why should not all of FERC's operating costs be legitimately chargeable to users?

Mr. Sousa. I think there will always be a small portion of our costs which will not be charged to the users, which are the companies we regulate, for the simple reason that we grant some of them exemptions from annual charges for a number of reasons. The exemptions for FY 1985 amounted to $1,000,000 and I would expect them to remain near this level through 1988.

Mr. Fazio. Though it seems to me that FERC should recover all its operating costs from user fees on each service for which costs are incurred, it would also seem that FERC should restrict the profits it makes as the rental agent for Federal resources to minimal, fair charges. Would any of FERC's rates exceed costs for the actual regulatory or permitting services provided?

Mr. Sousa. The rates to be charged would not exceed the costs for the services provided. But, because our fees and annual charges are based on the prior year costs and the workload output generated, it is possible that in a particular workload category the revenue we collect in one year could exceed that year's costs because of much higher incoming workload than projected. The critical factor here is the number of filings received in a year. If it varies from the estimate that was used to establish the fee for that particular filing category, the amount of revenue will also vary. A large increase in filings would mean revenue would probably exceed costs. But similarly, a decrease in filings would probably result in revenue being considerably less than costs for that filing category. While this is true for an individual workload category for which a separate fee is established, I would expect the variations in the fees collected as compared to costs to even out over the long term.

Mr. Fazio. Are you proposing any increases in resource charges such as falling water charges?

Mr. Sousa. Charges for the use of Government dams and other structures were established by Commission Order No. 379 which was issued in May 1984. No further changes to dam charges are under consideration at this time. However, the Commission has proposed revisions to charges for the use of Government lands in a Notice of Proposed Rulemaking issued in December 1985. This proposal is in response to the Department of Energy Inspector General's finding in September 1985, that the national average land value of $150 per acre, which has been in effect since 1976, grossly underestimates the current fair land values in most parts of the country.

Mr. Fazio. What new resource "rental" charges might FERC make in the pipeline, gas or electric power areas?

Mr. Sousa. The only resource rental charges the Commission now makes are for the use of government dams and lands. We do not plan any new rental charges in the oil pipeline, natural gas, or electric power areas.

OIL PRICES VS GAS PRICES

Mr. Fazio. Oil prices have fallen rapidly. Have gas prices followed?

Mr. Sousa. During the last four months, oil prices have fallen rapidly. The crude oil spot price saw the greatest erosion during this period falling by more than 40%. Contract prices paid by refiner for crude supplies have lagged behind the spot market and have fallen less dramatically. Refined product prices, particularly at the retail level, have likewise exhibited a lag in the price decline and percentage price declines have varied widely across geographic regions of the U.S.

Prices for natural gas supplies have exhibited much the same pattern. Specifically, spot market prices for natural gas at the wellhead have been under pressure, declining from the $2.10-2.20 range in September, last year to the $1.70-1.80 range in early March. Gas producer contract prices have fallen from the $2.50 range to slightly above $2.00 in the same period. Burnertip prices, perhaps most comparable to retail prices for refined petroleum products, have lagged in their downward adjustment, and just as with petroleum product prices, there appear to be regional variations in the price behavior.

The continuing decline in oil prices has provided increased competition with natural gas prices in many areas as evidenced by the number of out-of-cycle purchased gas adjustment filings made by interstate natural gas pipelines reflecting significant decreases in their average cost of purchased gas. As an example, Florida Gas Transmission Company, a major interstate pipeline under our jurisdiction, has recently made a filing with the Commission to adjust its purchased gas cost downwards.

In that filing, the company noted that the drop in No. 6 fuel oil prices had forced them to take extreme measures to reduce its cost of gas. The rate they have filed with the Commission drops their price for gas supply by more than $.50/MMBtu - a decrease of more than 20%.

Mr. Fazio. Do there remain institutional impediments in the market place preventing gas from remaining competitive?

Mr. Sousa. Unlike oil, natural gas in certain markets is subject to regulation at both the Federal and state level, from wellhead to burnertip. Efforts at competitive pricing flexibility are therefore subject to certain regulatory approval and oversight procedures. The FERC, for its part, is attempting to eliminate or to minimize institutional and regulatory impediments to competitive industry adjustments. The Commission has relatively broad discretionary powers to facilitate such adjustments to changing market conditions.

To this end, the Commission has permitted out-of-cycle revisions to rates applicable to pipelines' purchased gas costs. Furthermore, the Commission is currently reviewing flexible purchased gas adjustment procedures filed by several interstate pipelines. As filed, these would permit immediate response to decreased wellhead prices in the form of daily revisions to pipeline gas prices.

We also believe that the principles and procedures set forth in Order No. 436 will significantly change the regulation of interstate natural gas transportation, to make the benefits of competitively priced gas supplies and services available to all customers.

Also, the Commission has approved certain applications from natural gas suppliers for exemptions from the incremental pricing provisions of the Natural Gas Policy Act, to permit competitively priced sales to large industrial boiler fuel users, when such sales are in the public interest.

Finally, there are impediments preventing some suppliers from remaining competitive by virtue of long term gas supply contracts that do not contain provisions to reflect current market prices, that is market-out provisions, or do contain high minimum take-or-pay requirements.

ELECTRICAL TRANSMISSION

Mr. Fazio. Electrical transmission is the key to future wise energy development in a volatile production environment and will be the key to the survival of a competitive utility industry. What can FERC do to facilitate electrical transmission between sources and demands?

Mr. Sousa. I agree with your assessment of the importance of the Nation's electric transmission system. The FERC is, of course, interested in doing what it can to encourage transmission facility development and use in an economically efficient manner. As evidence of this interest, the FERC initiated a two-year experiment among six electric utilities in the Southwestern United States to test the effects of modified regulation of certain wholesale transactions of those electric utilities under our jurisdiction. The objectives were to determine the effects of current and alternative regulatory practices on the efficiency of bulk power exchanges and on the competitiveness of the market in which these exchanges occur. Part of the experiment was the provision of transmission services, wheeling, by each electric utility to all participating electric utilities.

The FERC recently initiated a comprehensive review of current regulations on wheeling and transmission access through the issuance of a Notice of Inquiry (NOI). Specifically, Phase I of the NOI deals with FERC regulation of coordination transactions and transmission service. Written comments were obtained and in addition, a public hearing was held in September 1985 to give interested parties further opportunity to present their positions. Regarding the transmission service issue, the NOI expressed concern whether there exists an adequate supply of transmission services and flexibility in rate design to encourage more competitive facility uses and access thereto. The views and comments that were submitted are under review and analysis by the FERC staff.

Commission authority for requiring electric utilities to interconnect or to wheel power is established under Sections 202(b), 210, 211, and 212 of the Federal Power Act (FPA). In addition to this authority, the FERC can provide incentives for utilities to invest in new transmission capacity and to provide additional transmission services through rates allowed for transmission service under its authority in FPA Sections 205 and 206. Other than pricing, the FERC has little or no control over the planning, licensing, and construction of electric transmission lines. State and local authorities directly influence the siting and certification of transmission facilities. Nevertheless, the FERC remains concerned about the progress of utility installations of these facilities. Last year the FERC was briefed by the North American Electric Reliability Council (NERC) on the adequacy and reliability of the Nation's bulk electric power supply system. Additionally, the FERC staff periodically attends certain meetings of other coordinating groups within the nine Regional Reliability Electric Councils and the National Association of Regulatory Utility Commissioners (NARUC) in order to keep apprised of significant impediments to reliable transfers of power between sources and loads where there is a potential for economic savings and other benefits.

However, impediments to the addition of transmission capacity can continue for years with mounting losses in savings from foregone economy power transfers. The incomplete 500 kilovolt transmission loop around Washington, D.C., is a case in point. This loop was originally scheduled for service in the mid-1970's. Only late last year did the Potomac Electric Power Company receive its Certificate of Public Convenience and Necessity from the State of Maryland for a critical portion of this loop. Completion of this loop will provide an increase of approximately 650 megawatts in power transfer capability between the relatively low cost coal-fired generation to the west and the higher cost oil-fired generation in the east. The FERC has no direct or other authority to influence this long delayed outcome.

By improving the transmission system's capability it is reasonable to assume that transmission access by all suppliers and customers will improve. For example, there has been a continuing need for more transmission capability between the Pacific Northwest and California so that both regions can share each other's resources. However, no single electric utility could justify the required investment. In 1984, the U.S. Congress authorized the development of a major transmission line addition which would enhance the existing Pacific Northwest/Southwest intertie facilities. This led to an agreement between the major California utilities and state and federal agencies setting forth plans for the additional transmission capacity. Presently, there are about 23 participants including investor owned; Federal, state and municipal owned; and, cooperatively owned utilities. Although the Federal Government has influenced this action, participation is voluntary.

In summary, even though the FERC has limited powers to order interconnection and wheeling, the FERC remains committed to the voluntary cooperation of and coordination among electric utilities to pursue their common needs for transmission capability and the efficient, economic, and competitive use of these facilities.

SEGS II PROJECT

Mr. Fazio. Will FERC give a prompt and reasonable interpretation of the law regarding certification for the Luz Engineering solar thermal/natural gas plant proposal?

Mr. Sousa. I recognize the concerns of Luz Engineering Company and Blount International, Ltd. in obtaining a prompt resolution of the issues raised in their application seeking certification of the SEGS II project as a qualifying small power production facility. I will do everything I can to expedite consideration of this application by the Commission.

HUGO DAM HYDROELECTRIC POWER PROJECT

Mr. Watkins. Two entities have applied for a license to develop a hydropower facility at an existing Corps of Engineers dam in my congressional district. I believe they are listed as projects #3555 and #8074. The first license was filed on 24 June 1983; the second was filed on 3 February 1984. Does it normally take this long for FERC to make a decision? If so, why? If not, what is the reason for the delays on this project?

Mr. Sousa. The normal processing time for a non-competing license application for a project similar in scope to Projects Nos. 3555 and 8074 is 1 year to 18 months from the time the application is found acceptable. The actual processing time is dependent upon the complexity of the issues raised during the proceeding.

Competing applications, by their very nature, require significantly longer to process. Both applications must be fully processed before a decision can be made on which application should be licensed. In the instant case, P-8074 was filed a full 7 months after P-3555. Therefore, after processing of P-3555 was well underway, staff had to initiate the processing of P-8074.

Mr. Watkins. On project #8074, FERC requested supplemental data, and it was subsequently submitted by the applicant to FERC on 21 June 1985. The applicant received no communication from FERC until 10 February 1986, at which time a FERC request was made that information submitted in February 1984 be resubmitted. Is this normally the operating procedure for FERC? If not, why did it occur on this project? If so, why does it take so long for FERC to respond?

Mr. Sousa. The application for P-8074 was filed in February 1984. The application wasn't accepted until November 1984 because deficiencies had to be corrected. After issuance of public notice and request for agency comments, the applicant for P-8074 was asked to respond to comments submitted by agencies during the public notice period in order to enable staff to prepare its technical analysis of the competing projects. This response was filed on June 21, 1985. During staff's technical analysis it was determined that Red Ark had never commented on the City of Broken Bow's rebuttal to Red Ark's comparison statement contained in Red Ark's original license application. Red Ark's comparison statement discussed the reasons why it believed its proposal was superior to the development proposed by the City of Broken Bow. The City's rebuttal was filed on March 6, 1984, and challenged the total capacity proposed and the economic feasibility analysis presented by Red Ark in its comparison statement. Staff, in order to minimize any disputed facts, on February 7, 1986, requested that Red Ark once again compare its project to that of the City. Although the letter did not clearly so state, the intent was that Red Ark, after reviewing the City's rebuttal, revise its comparison statement as it felt appropriate. Staff has contacted Red Ark's agent to clarify the intent of the February 7, 1986 letter.

Section 7(a) of the Federal Power Act provides a competitive advantage to proposals for public development of water projects, but the preference does not extend to joint applicants who consist of one or more municipal entities and one or more private entities ("hybrid applicants"), since they are not included within the scope of "states and municipalities" discussed in the Section. See City of Fayetteville Public Works Commission, Project No. 3137, et. al. "Order Determining Preference, Issuing Preliminary Permit and Denying Competing Application" (16 FERC ¶61,209). Also, in order for a license filed by a permittee to be eligible for permit based preference in the licensing stage, the license applicant must be identical to the permittee. If the two parties are not identical, licensing preference may be lost. The staff is aware of a proposed contract for building, owning, and operating the project between Ramel Corporation, a private entity, and the City of Broken Bow (City). This contract might affect the City's municipal and permittee status.

The Commission policy is to investigate allegations of a "hidden hybrid" (the situation where an application is filed ostensibly by a municipal entity, but where that entity has entered into agreements with a private entity for assistance in financing, developing, or operating the project, which agreements do not comport with FERC requirements) at the licensing stage. This issue must be resolved prior to final action on the case. It is estimated that an environmental assessment would be completed this spring and, unless a hearing is determined necessary, final action by the Commission on these competing cases would be taken by September 1, 1986.

Mr. Watkins. How long do you think an applicant can maintain commitments for financing on a project such as this?

Mr. Sousa. The Commission is highly cognizant of and sensitive to the problems that applicants face in obtaining and maintaining financing commitments during the licensing review process. However, I must also be concerned with the prospect that premature action on a license proposal could invalidate the review process, thus jeopardizing the entire project.

Mr. Watkins. Is it not true that the preliminary permit period on a project is normally two years? Is this not the period of time allowed an applicant to study the project and make a decision as to whether to pursue the project? If the applicant must make this decision in two years, then why can FERC not make its decision in at least two years?

Mr. Sousa. Section 5 of the Federal Power Act states that preliminary permits shall be issued for a period or periods not exceeding a total of 3 years. The Commission previously attempted to match the term of the preliminary permit to the scope of the project, issuing 12-month, 18-month, 24-month, or 36-month permits on a case-by-case basis. Currently, however, to afford permittees the maximum time allowable under law to complete their studies and prepare development applications, the Commission is issuing preliminary permits for the full 36-month term in all cases.

As I stated previously, competing applications require a significantly longer time to process than do single applications for license. The normal processing time for license applications that do not compete is usually 1 year to 18 months. The applications that are the subject of your questions would be expected to take longer than an application that is not competitive; the actual time is dependent upon the nature and difficulty of the issues to be resolved.

PINE CREEK DAM HYDROELECTRIC POWER PROJECT

Mr. Watkins. Regarding projects #3555 and #3657, I received a copy of a letter to the applicant from FERC dated 26 March 1985. In this letter from Ms. Kristina Nygaard, FERC indicated that because of agreements between the two cities listed as applicants and a private company, the applicants might not be eligible for the municipal preference they had received, and therefore would be ineligible to receive a license on these two projects. Has a determination been made regarding these two cities' eligibility? If so, what was the determination? If not, what is the expected date of the determination?

Mr. Sousa. The applicant for a license for Hugo Dam Hydroelectric Development Project No. 3555 is the City of Broken Bow, Oklahoma. The applicants for a license for Pine Creek Hydroelectric Development Water Power Project No. 3657 are the City of Broken Bow, Oklahoma, and the City of Nashville, Arkansas. The applicants' agent for both applications is Richard H. Davis, Jr., President of the Ramel Corporation.

On August 10, 1984, Mr. Bob Burke, City Attorney for the City of Broken Bow, Oklahoma, wrote to Mr. Ronald A. Corso, Director of the Commission's Division of Hydropower Licensing, asking for advice on "the potential liabilities of [the] City and its involvement in approving contracts with the Ramel Corporation on the development of water rights and a hydropower license on Hugo and Pine Creek Reservoirs ... ." Mr. Burke enclosed a copy of the City's contract with the Ramel Corporation. A copy of Mr. Burke's submittal is attached.

Shortly after Mr. Corso received Mr. Burke's letter, the Deputy Assistant General Counsel for Hydroelectric Licensing discussed the contracts with Mr. Burke. His observations were subsequently placed in a March 26, 1985 letter (attached) to Mr. Burke from Kristina Nygaard, Assistant General Counsel for Hydroelectric Licensing. That letter pointed out that a municipality desiring to develop a licensed project with the assistance of a non-municipal entity in financing, studying, constructing or operating the project could still be eligible for municipal preference, so long as the municipality retained all necessary ownership and control rights to the project. The letter observed that the City's contract with Ramel did not appear to assure any such necessary control, and did not make clear whether, as a condition to obtaining financing, the municipality would be giving up property rights that the licensee is required to hold. The letter pointed out that any agreement that would require Broken Bow, as the municipal licensee, to relinquish ownership of project lands and works or divest itself of the requisite control over operation of the project would create an impermissible hybrid venture. Under those circumstances, the letter concluded, "[a] municipality would ... lose its municipal preference and might be subject to other sanctions, such as disqualification from competition, for abusing municipal preference."

Mr. Burke's August 10, 1984 letter asking advice of the Commission staff was not a formal pleading requesting a "determination" of the City's eligibility to be a municipal licensee in light of its contract with the Ramel Corporation. Nor, in routine cases, is the Commission called upon to make a determination as to a municipality's eligibility to obtain a license pursuant to municipal preference. Ms. Nygaard's March 26, 1985 letter to Mr. Burke pointed out the requirements for a municipality to retain the benefits obtained through municipal preference. In order to ascertain whether, with the Commission staff guidance it has received, the City has made appropriate arrangements to be eligible to retain those benefits, the Commission staff has sent the agent for Hugo Dam Project No. 3555 and Pine Creek Project No. 3657 an additional information request (under 18 C.F.R. § 4.32(f) (1985)) to supply the applicants' current plans for financing, owning, and operating the project. Upon receipt of adequate information on these matters, the Commission will promptly determine whether municipal preference has been properly used.

Letter from Mr. Watkins' Constituent

BOB BURKE
ATTORNEY AT LAW

203 NORTH MAIN
BROKEN BOW, OKLAHOMA 74728
405-584-6187

August 10, 1984

Ronald A. Corso
Director of the Division of Hydropower Licensing
Federal Energy Regulatory Commission
825 North Capitol St. N.E.
Washington, D.C. 20426

Re: City of Broken Bow/Ramel Corporation

Dear Mr. Corso:

As City Attorney for the City of Broken Bow, Oklahoma, I am unsure of the potential liabilities of our City and its involvement in approving contracts with the Ramel Corporation on the development of water rights and a hydropower license on Hugo and Pine Creek Reservoirs in Oklahoma.

I enclose a copy of both contracts for your perusal.

Could you please advise as to your agency's opinion of the validity of such contracts and what liability that the City of Broken Bow is assuming?

Sincerely,

BOB BURKE

BB/nv

cc: Roger Morie, Hydropower Licensing and Inspection

cc: Janet Oakley, Project Attorney

S—

file in Pine Creek H.P.
w/ copy in
Hugo H.P.

8/16/84 requested copy of contracts to be sent to Ted Coombes. (CB)

RECEIVED
AUG 13 1984
RedArk

STATE OF OKLAHOMA }
COUNTY OF McCURTAIN }

AGREEMENT

THIS AGREEMENT made by and between the consolidated political subdivision known as Broken Bow, Oklahoma, (hereinafter referred to as Broken Bow) and The Hamel Corporation, an Arkansas corporation organized and existing under the laws of the State of Arkansas (hereinafter referred to as Hamel).

WHEREAS, Hamel is organized and exists for the purpose of developing and managing hydroelectric power and hydropower additions under the guidelines and regulations pursuant to the Federal Power Act and other Federal and State laws, and

WHEREAS, Hamel has filed in the name of the City of Nashville, Arkansas, an application for a preliminary permit from the Federal Energy Regulatory Commission at the existing Pine Creek Dam on Little River in McCurtain County, Oklahoma, (hereinafter referred to as project) for the purpose of studying and examining the necessary engineering, economic, environmental and institutional aspects to determine feasibility of developing a project at such site for the marketing of electric power and other information necessary to file an application for a license to develop a hydroelectric facility at such site, and

WHEREAS, Hamel is cognizant of certain favorable treatment and priorities given an Oklahoma municipality in the application process concerning a site in Oklahoma, as well as the favorable economic implication of Oklahoma municipal development of such project, and

WHEREAS, Ramel, in return for the benefits offered to it by an Oklahoma municipality, wishes to enter into an arrangement with Broken Bow wherein and whereby the project will be jointly developed by Nashville, Arkansas, and Broken Bow, Oklahoma, with no out-of-pocket expense to Broken Bow with the actual development and management of the project to be carried out by Ramel, and

WHEREAS, Broken Bow and Ramel are desirous of setting forth in general terms their mutual accords and intentions to develop and manage a hydroelectric facility for the purposes set forth herein.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS that in consideration for the above premises and for the mutual obligations created hereby and the benefits so derived, the parties agree that:

1. PURPOSE. For the purpose of developing the project jointly in the name of the City of Nashville, Arkansas, and of Broken Bow, Oklahoma, for the production of hydroelectric power, Ramel will, on behalf of the project, do all such acts as required by law and in the Federal and State Regulatory processes to successfully develop and manage the project to market electrical power.

2. ROLE OF PARTIES. It is understood and agreed by the parties hereto that Broken Bow's role as a co-developer of the project will be limited to such participation as is necessary to properly authorize and execute such applications and documents necessary to secure preliminary permits, licenses, grants, loans, or other financing, but Broken Bow shall not bear any burden of the expense of studying the feasibility of the project, developing or managing the project. Ramel will fund the feasibility study, file for licensing of the project, develop and manage the project.

3. PROJECT FINANCING. Both Ramel and Broken Bow understand and agree that development of the project will be at no expense to Broken Bow. However, Broken Bow agrees that when available and if economically advantageous, it will participate in Federally funded loans or other funding supported solely by the project.

4. COMPENSATION. The parties hereto mutually agree that upon development of the project, Ramel and Broken Bow will disburse the net proceeds from the sale of electricity (after deduction of all debt service, cost of operation and maintenance, site acquisition and all other related expenses) on the basis of 92% to Ramel and 8% to Broken Bow for the duration of the licensing period of the project. Broken Bow shall have complete access to all corporate books and all project related documents, reports, studies and any other material having any bearing whatsoever on its net receipts pursuant to the operation of this project.

60% R
40% BB
in Hugo Lake

5. DURATION OF CONTRACT. In the event the project becomes operational, it is contemplated that this contract will extend the duration of the Federal licensing period of the project and any renewals thereof. In the event that the project is deemed not feasible during the preliminary permit stage or for any reason cannot be completed, then this contract shall not be binding.

6. CONTROL. Ramel hereby retains all decision-making capabilities on determination of the feasibility, engineering work, development, design and management of the project and Broken Bow hereby authorizes Ramel to do all such acts as are necessary to accomplish the successful development and management of the project. Futhermore, Broken Bow will execute in favor of Ramel such documents as may be necessary for the delegation of decision making authority with respect to all project related matters.

7. HOLD HARMLESS. Ramel agrees to indemnify and hold Broken Bow harmless from any and all liability arising from any and all suits, demands, claims, or causes of action asserted against Broken Bow by reason of permit application, licensing, construction or operation or other performance contemplated or done by reason or by virtue of this contract.

WITNESS our hands and seals this 20th day of January, 1981.

The City of Broken Bow, Oklahoma

BY: ____________________
Mayor

BY: Carolyn E. Buckner
City Clerk

Witnesses:
Tommie Newman
Betty Sparkman

The Ramel Corporation

BY: Richard H. Davis, Jr.
President

Witnesses:
Tommie Newman
Betty Sparkman

MAR 26 [illegible] PM '85

DRO

Bob Burke, Esquire
203 North Main
Broken Bow, Oklahoma 74728

Dear Mr. Burke:

This is in response to your August 10, 1984, letter to Mr. Ronald A. Corso of the Commission's Office of Hydropower Licensing regarding a joint development agreement for Project No. 3555. Your letter has been referred to me for response. As you may know, Commission staff discussed your concerns with an attorney in your office shortly after receiving your letter. I regret the delay in responding to your letter and hope the following comments will be of assistance to you in considering options for development of your proposed project on Hugo and Pine Creek Reservoirs.

A municipality desiring to develop a licensed project and be eligible for municipal preference under Section 7(a) of the Federal Power Act (16 U.S.C. § 800(a)) may make arrangements with non-municipal entities for assistance in financing, studying, constructing or operating a project. However, in making such arrangements the municipality must retain ownership of all property rights in project works and lands necessary for project purposes and may not relinquish any of the control a licensee must have over its licensed project (see City of Fayetteville Public Works Commission, 16 FERC ¶ 61,209 (1981)).

The agreement you forwarded for our consideration does not appear to address any assurance of control to the municipal licensee such that it would be in a position to comply with the requirements of its license and any Commission directives issued thereunder. Furthermore, the financing arrangements anticipated are not spelled out in sufficient detail to reveal whether, as a condition to obtaining financing, the non-licensee developer or some other non-municipal entity would hold property rights in project works or lands.

Any agreement that would require Broken Bow, as the municipal licensee, to relinquish ownership of project lands and works or divest itself of the requisite control over operation of the project would create an impermissible hybrid venture. A municipality would under these circumstances lose its municipal preference and might be subject to other sanctions, such as disqualification from competition, for abusing municipal preference.

As you proceed to finalize any joint development arrangements, you may find it helpful to seek further informal guidance from our legal staff. In this regard, you should contact me or Deputy Assistant General Counsel Donald Clarke at (202) 357-8448.

If I may be of further assistance to you in this or any other Commission matter, please let me know.

Sincerely,

Kristina Nygaard
Assistant General Counsel
Hydroelectric Licensing

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

MAR 18 1986

Project No. 3657-001
City of Broken Bow, Oklahoma
and City of Nashville,
Arkansas

Mr. Richard H. Davis, Jr.
President
Ramel Corporation
Route 5, Box 4813
Nashville, Arkansas 71852

Dear Mr. Davis:

In light of the questions raised by the August 10, 1984 letter from Mr. Bob Burke, then City Attorney for the City of Broken Bow, Oklahoma, regarding the role contemplated to be played by the Ramel Corporation with respect to ownership of, and control over necessary rights for, the proposed Project No. 3657, you are requested, pursuant to Section 4.32(f) of the Commission's regulations, 18 C.F.R. § 4.32(f) (1985), to supplement your application with the following information. Please detail the applicant's current plans for financing the project. If financing is to be accomplished through issuance of municipal bonds, please provide a recent opinion of counsel or underwriter that this method of financing remains feasible. Also, please specifically address the considerations spelled out in the enclosed March 26, 1985 letter to Mr. Burke regarding the retention by the applicant of necessary control of project property and operations. The information should be provided within 30 days from the date of this letter.

Sincerely,

Kenneth M. Pusateri
Acting Director, Office of
Hydropower Licensing

Enclosure

Mr. Watkins. If these two cities are determined to be ineligible, could they re-apply?

Mr. Sousa. In the event that the applicants appear to have impermissibly used municipal preference for the benefit of a non-municipality and to the detriment of other competing applicants and potential competitors, the Commission has a variety of sanctions it can invoke to rectify the situation. In the past it has given such municipal applicants 30 days to demonstrate that there was no abuse of municipal preference. See, e.g., Gregory Wilcox, 24 FERC ¶ 61,317 (1983); Orofino Falls Hydro Limited Partnership, 26 FERC ¶ 61,245 (1984). Where the municipal applicant has been unable to refute the evidence of abuse, the Commission has dismissed its application and has barred it from filing for the site for a period of one year from the issuance date of the order dismissing its application. See Gregory Wilcox, 26 FERC ¶ 61,113 (1984), rev'd on other grounds, Uncompahgre Valley Water Users Association v. FERC, 10th Cir. No. 84-1803 (March 5, 1986); Orofino Falls Hydro Limited Partnership, 27 FERC ¶ 61,434 (1984). If the site is available for the filing of initial or competing applications after the one-year suspension period, the municipal applicant may again file an application for the site. Id.

Mr. Watkins. Could someone else apply?

Mr. Sousa. Upon dismissal of the municipal applicant's application, the site becomes available for other entities to file applications for preliminary permit, license, or exemption from licensing, as appropriate.

Mr. Watkins. If they are determined to be eligible, when do you expect a decision regarding their application for a license?

Mr. Sousa. If they are determined to be eligible, an Environmental Assessment would be prepared this spring and an order acting on the case would be issued by the Director, Office of Hydropower Licensing, in mid-summer 1986 for Project No. 3657.

MILL CREEK DAM HYDROELECTRIC POWER PROJECT

Mr. Watkins. An application was submitted to FERC for an exemption for the Mill Creek Dam Project, a small hydroelectric power project that is proposed to have an installed capacity of 5 megawatts or less, from licensing under the Federal Power Act. The project was issued preliminary permit No. OEPR-FW-6958-OK on 24 February 1984. I understand that the application was rejected by FERC, and that an appeal was filed by the applicant according to FERC guidelines. The applicant has received no response from FERC, despite the fact that a considerable amount of time has passed. What is the status of this application and appeal?

Mr. Sousa. Mr. Fred A. Chapman filed an application for exemption from licensing for the Mill Creek Project No. 6958 on August 19, 1985. On October 4, 1985, the Acting Deputy Director, Office of Hydropower Licensing, notified Mr. Chapman by letter that his exemption was rejected. Pursuant to the Commission's Rules of Practice and Procedure, 18 C.F.R. 385.1902(b) (1985), Mr. Chapman had thirty days to appeal this staff action. Since the thirtieth day fell on Sunday, November 3, Mr. Chapman had until Monday, November 4, 1985, to file an appeal of the rejection (see 18 C.F.R. § 385.2007(a)(2) (1985)).

Mr. Watkins. If both have been denied, on what grounds was that decision made? If the appeal is still pending, when might we expect a decision to be made?

Mr. Sousa. The application was rejected as patently deficient, for failure to supply information required by the Commission's filing requirements in 18 C.F.R. § 4.38 (prefiling consultation) and 18 C.F.R. § 4.107 (e.g., documentation of necessary property interests). No appeal was filed as of November 4, 1985; consequently, the rejection became final and non-appealable after November 4.

Mr. Watkins. Will you notify the applicant of that decision?

Mr. Sousa. The Commission's regulations do not provide for notification to parties of the finality of an unappealed order.

Mr. Watkins. What are your procedures for considering appeals and providing a response to applicants?

Mr. Sousa. On November 8, 1985, Mr. Joe G. Elles filed an appeal of the rejection of the application for Project No. 6958. Since it was late, it was not accepted; however, through a clerical oversight, Mr. Chapman did not receive a notice of the rejection of the late appeal. That oversight has been corrected, and the Commission Secretary has issued the appropriate notice.

Mr. Watkins. What criteria would have to be met in order for an applicant to qualify for an exemption from FERC licensing for this project?

Mr. Sousa. Part 4 of the Commission's regulations (18 C.F.R.) specifies the information necessary to file an acceptable exemption application. Particular attention should be paid to § 4.38 (prefiling consultation requirements), and § 4.107 (contents of applications for exemption from licensing). Significant deficiencies in the P-6958 exemption application, which are typical problems in other exemptions, include failure to provide documentary evidence that the applicant had acquired the necessary property rights to develop the project, an accurate description of project structures, and completion of prefiling consultation with resource agencies prior to filing the application.

SELLING THE PMAS

Mrs. Smith. Multipurpose dams provide a number of public benefits, including flood control, navigation, recreation, irrigation and municipal and industrial water supply. Who will coordinate these public benefit functions when the PMAs are sold, and how will they be coordinated? Who will coordinate the flow of the river? Which function will be given priority?

Mr. Sousa. The Administration proposes to dispose of the transmission facilities owned and operated by the PMAs and the powerplants owned and operated by the Corps of Engineers and the Bureau of Reclamation. However, the Corps and the Bureau would continue to own and operate the associated multipurpose reservoir projects. Presumably, therefore, the projects would continue to be operated to serve other functions in accordance with reclamation laws in the case of the Bureau and the various flood control acts governing Corps of Engineers operations. Also, to the extent that the hydroelectric plants would come under the purview of the FERC under the Federal Power Act, the FERC would place its own conditions on power operations.

Mrs. Smith. Under current law, PMAs must repay to the Federal government all costs of construction, operation and maintenance for Federal power production and transmission--including principal and interest. As you know, the price of Federal power is based on the cost of production. How would cost-based pricing be affected by the sale of PMAs? Can we assume that consumers would pay more for their power?

Mr. Sousa. At this stage in the deliberations, it is too early to predict the effect on consumers of the proposed change in ownership.

The main factor that should affect the rates to consumers is the purchase price of the facilities. Also, to the extent that the purchasers' cost of capital would be greater than the interest rates imputed to the PMAs, the rates to the current customers could increase. However, the increase could be offset if the power customers were to be relieved of some of their current responsibilities such as assistance in repayment of the cost of irrigation facilities, BPA's guarantee of certain obligations for WPPSS Units 1, 2, and 3, and BPA's energy exchange program with investor-owned utilities. These issues are being considered by a DOE task force.

Mrs. Smith. What do you consider to be a fair sale price for the PMAs? For how much would you sell the Western Area Power Administration (WAPA)? Do you base your estimate on market price? replacement costs? debt still owed to the government?

Mr. Sousa. The Commission has made no study concerning a fair sale price of any of the PMAs. OMB's initial estimate assumes that the sale price would be the amount of unpaid Federal investment. It is my understanding that this assumption was made for budget planning purposes only. One proposal that would result in a lower sale price would be the discounted present worth of the existing stream of revenues based on the Federal government's current cost of borrowing. Other alternatives that are fairly common in the utility industry, that would result in higher prices, would be the cost of replacement or the market value. One factor that would almost certainly be considered in determining the price would be whether any restrictions are placed on the buyer such as a continued responsibility to serve the needs of preference customers.

NATURAL GAS

Mrs. Smith: In Nebraska, 65 percent of the gas we consume is old gas. DOE's proposed "old gas" rule would raise the ceiling price on old gas from 76 cents to about $2.56. If the rule is approved, how much of an increase could we expect in old gas prices?

Mr. Sousa: Pending completion of our review of the comments on the DOE proposal, we are unable to quantify the impact on Nebraska consumers that would result due to any increase in old gas prices. In addition, there is no assurance under the DOE proposal that producers would collect such a rate under existing contracts. Since any higher established old gas rate would be a ceiling rate and not serve as a floor, the parties could agree on a lower price. Market forces such as the availability and price of alternative energy sources including oil, coal, or price deregulated gas supplies would bear upon the price that a purchaser will ultimately pay for old gas supplies. Further, DOE argues that higher old gas prices would tend to force down the price of new gas supplies and thus ameliorate the dollar impact on the consumer.

Another factor making it impossible to quantify this dollar impact is the fact that most purchasers buy gas of various vintages and prices and compete in the market based on their weighted average cost of gas. DOE argues that, if their mix consists more of old gas, any increase in old gas prices would either make them less competitive in the market or force them to cut back on their high cost gas prices and/or purchases.

Mrs. Smith. Is it correct that FERC has determined that an old gas price of $2.56 is "just and reasonable"?

Mr. Sousa. No, it is not correct that the FERC has determined that an old gas price of $2.56 is "just and reasonable."

On December 20, 1985 the Commission issued a notice of procedural schedule establishing a timetable for public comment on a notice of proposed rulemaking issued by DOE for action by the Commission under section 403 of the Department of Energy Organization Act.

Under the proposed rule, the Commission would exercise its authority: under sections 104 and 106 of the Natural Gas Policy Act of 1978 (NGPA), to establish just and reasonable rates for "flowing" old gas, and under section 107 of the NGPA to establish incentive prices for certain categories of old gas. Under the DOE proposal, the Commission would act to eliminate vintaging and replace the current myriad of old gas ceiling prices with a single ceiling price, the ceiling for post-1974 gas, currently $2.56 per MMBtu. In addition, the Commission would establish incentive prices for certain categories of old gas in order to increase significantly the production of old gas and to encourage long-term investment in natural gas exploration, development and production.

Initial comments on the DOE proposal were due February 25, 1986 and reply comments must be filed with the Commission by 4:30 p.m. on March 27, 1986. Also, any interested person may request to participate in a public conference that will convene at 9:00 a.m. on April 10 and 11, 1986, at the Commission's offices in Washington, D.C.

Mrs. Smith. Is this $2.56 "just and reasonable" price above the current spot market price? How is that "just and reasonable" and how did you come up with the $2.56 figure?

Mr. Sousa. Because the Commission is currently considering the DOE proposal and therefore has made no determination as to whether the proposed new rate is "just and reasonable," I am unable to respond to these questions at this time. However, I am providing for the record a copy of the DOE petition for rulemaking which discusses the Secretary of Energy's rationale for proposing a new just and reasonable rate for old, flowing gas.

DEPARTMENT OF ENERGY

18 CFR 271

AGENCY: Department of Energy

ACTION: Notice of Proposed Rulemaking; Changes to the Old Gas Pricing Structure -- Proposed Rule to Federal Energy Regulatory Commission

NOV 13 2 49 PM '85

SUMMARY: Pursuant to Section 403 of the Department of Energy Organization Act (DOE Act), the Secretary of Energy (Secretary) is proposing a rule for final action by the Federal Energy Regulatory Commission (Commission). The Secretary is proposing the Commission exercise its authority (1) under sections 104 and 106 of the Natural Gas Policy Act (NGPA), to establish just and reasonable prices for "flowing" old gas, and (2) under section 107 of the NGPA, to establish incentive prices for certain categories of old gas. Under the proposal, the Commission would act to eliminate vintaging and replace the current myriad of old gas ceiling prices with a single ceiling price (the ceiling price for post-1974 gas). In addition, the Commission would establish incentive prices for certain categories of old gas, in order to increase significantly the production of old gas and to encourage long-term investment in natural gas exploration, development, and production. Under both proposed actions, a producer would receive a price higher than the current price only if a purchaser agreed to the higher price. The Secretary is requesting the Commission take final action on this proposal by June 1, 1986.

The Department of Energy (DOE) believes the proposed actions are necessary to mitigate the waste, economic inefficiency, and

market distortions existing in the current natural gas market. DOE believes the proposal would result in about 34 trillion cubic feet (Tcf) of additional old gas production and benefit the American economy by more than $25 billion during the next decade.

DATES: Commission to take final action by June 1, 1986. Dates for comments and public hearings to be published later by the Commission.

FOR FURTHER INFORMATION CONTACT:

James White or Ben McRae
Division of Natural Gas and Mineral Leasing
Office of General Counsel
U.S. Department of Energy
Room 6E-042
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 252-6667

Stephen Minihan
Director, Division of Oil and Gas
  Analysis
Office of Policy, Planning and Analysis
U.S. Department of Energy
Room 7H-034
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 252-6423

SUPPLEMENTARY INFORMATION:

I. Introduction

II. Discussion

  A. Just and Reasonable Prices
    1. Legal Authority
      a. Deference to Commission's Exercise of Its Authority
      b. Zone of Reasonableness
      c. Vintaging
      d. Responsiveness to Current Conditions
      e. Impact of NGPA

    2. Applicability of Legal Standard to Current Conditions
      a. Need to Update Rates
      b. Sharing of Replacement Costs

        c. The Zone of Reasonableness Has Increased Since the Last Ratemaking
        d. Old Gas Supply Response
        e. Unprecedented Disparities in Ceiling Prices
        f. Simplifying a Complex Rate Structure
        g. Market Distortions Caused by Widely Varying Old Gas Rates

    3. Economic Criteria for Just and Reasonable Rates
        a. Efficiency
        b. Fair Competition
        c. Non-Wasteful
        d. Appropriate to Current Conditions
        e. Application to Existing Old Gas Pricing Structure

B. Incentive Prices

    1. Legal Authority
    2. Old Gas Supply Response
        a. Premature Abandonment
        b. New Infill Wells
        c. Production Enhancement

C. Benefits of Higher Old Gas Ceiling Prices

    1. Higher Old Gas Ceiling Prices Will Not Result in Higher Average Prices
    2. Additional Production of Old Gas Will Provide Economic Benefits Immediately
    3. Old Gas Production Increases by More Than New Gas Production Declines
    4. Increased Old Gas Production Means Less Gas and Oil Imports

III. Proposal

A. Just and Reasonable Price for Flowing Old Gas

    1. Eliminate Vintaging
    - 2. Good Faith Negotiation Rule

B. Incentive Prices

    1. Production Enhancement
    2. New Wells
    3. Marginal Wells

IV. Procedural Requirements

I. Introduction

Approximately half of America's natural gas production is still subject to a woefully outmoded price structure, which has been in place without change since passage of the NGPA. As a result, American consumers are paying too much for natural gas, as much as 44 Tcf of old gas reserves (almost two years supply at current consumption rates) will never be produced, imports of both oil and gas are higher than necessary, and U.S. energy security and the trade balance are weakened.

The existing price structure for old gas creates a barrier against the production of tens of trillions of cubic feet of old gas reserves, even though these reserves are easier and less expensive to produce than other gas sources. The artificially low prices imposed on old gas by the existing price structure prevents us from producing all our economically recoverable old gas supplies. As a result, Americans are consuming gas from more expensive sources, as well as imported oil and gas, instead of first consuming inexpensive old gas. America should produce all its economical gas resources, but it should produce its least expensive gas first. The Department estimates that greater recovery of domestic old gas resources would provide the U.S. economy with economic benefits of over $25 billion during the next decade. The benefits would result from greater economic efficiency, higher domestic gas production, and lower payments for gas and oil imports.

The problems of the natural gas market today are well known. The Commission has recently been in the forefront of the effort to deal with them. In issuing its new omnibus transportation rule, the Commission recognized the need to reform practices that had long since ceased to match the realities of the marketplace. DOE is proposing a new just and reasonable ceiling price for flowing old gas and incentive prices for certain categories of old gas as integral companions to the Docket No. RM 85-1-000 rule. Moreover, DOE does not believe the Commission should adopt the "blockbilling" proposal in Docket No. RM 85-1-000 without taking concurrent action on these proposed reforms of the existing old gas price control structure.

DOE believes legislative decontrol would be the best solution for problems created by the existing old gas pricing structure. However, in the absence of legislative decontrol, the Commission has a responsibility to ensure that old gas price controls best serve the interests of consumers and producers. The Commission has ample authority to reform the existing old gas price control structure to eliminate much of the waste, economic inefficiency, and market distortion caused by the current structure. DOE is proposing the Commission exercise that authority.

II. Discussion

A. Just and Reasonable Prices

1. Legal Authority

a. Deference to Commission's Exercise of Its Authority. After the Natural Gas Act (NGA) was passed in 1938, 1/ the

---

1/ 15 U.S.C. § 717 *et seq*.

Federal Power Commission (FPC) used a wide variety of methods to set rates for old gas. The courts consistently accorded great deference to the exercise of the Commission's expertise, grounded on its knowledge of the natural gas industry, its sensitivity to gas consumer interests, and its understanding of the changing problems of the natural gas markets. So long as the end result reached by the Commission in a ratemaking was reasonable, was based on substantial evidence in the record, and did not exceed the Commission's jurisdiction, the courts did not interfere with the exercise of the Commission's ratemaking authority. 2/

b. Zone of Reasonableness. The courts have emphasized repeatedly their lack of authority "to set aside any rate adopted by the Commission which is within a 'zone of reasonableness.'" 3/ This zone has been defined quite broadly so as "to integrate costs factors with non-cost and policy considerations." 4/ The zone can grow in accordance with factors such as replacement costs, commodity costs of alternative fuels, and competition.

2/ Permian Basin Area Rate Cases, 390 U.S. 747 (1968); F.P.C. v. Hope Natural Gas Co., 320 U.S. 591 (1944).

3/ Permian Basin Area Rate Cases, 390 U.S. at 797.

4/ The Second National Natural Gas Rate Cases, 567 F.2d 1016, 1030 (D.C. Cir. 1977); see also FPC v. Conway, 426 U.S. 271 (1976); Mobil Oil Corp. v. FPC, 417 U.S. 283 (1974).

c. Vintaging. 5/ Never have the courts ever suggested the NGA commanded the Commission to adopt vintaging for old gas rates. On the contrary, the courts repeatedly emphasized the Commission's flexibility and discretion in dealing with the challenges it faced in natural gas ratemakings. 6/ As far as vintaging was concerned, the courts upheld the Commission when it vintaged old gas rates, even when the categories were as many in number and as varied in price as the rates existing today, 7/ when the Commission adopted only a single rate for all old gas, 8/ and when it adopted a rate for old gas that would collapse its ceiling price with that of new gas as contracts for old gas rolled over. 9/ Vintaging or not vintaging old gas rates was thus a particular ratemaking method entrusted by Congress to the Commission's administrative discretion, as long as the other conditions for passing judicial review were met.

5/ Vintaging refers to the system under which different prices are assigned to old gas on the basis of when production commenced.

6/ See note 2, supra; Shell Oil Co. v. F.P.C., 520 F.2d 1061 (5th Cir. 1975), cert. denied 426 U.S. 941 (1976).

7/ E.g., Tenneco Oil Co. v. F.E.R.C., 571 F.2d 834 (5th Cir. 1978).

8/ E.g., Permian Basin Area Rate Cases, supra; Mobil Oil Corp. v. F.P.C., 417 U.S. 283 (1974).

9/ Shell Oil Co. v. F.P.C., supra.

d. Responsiveness to Current Conditions. The courts disfavor mechanical ratemakings. 10/ The courts have urged the Commission to take into account such factors as "supply, demand, reserves or industry structure" in establishing just and reasonable rates. 11/ The Commission must face up squarely to the problems in the current market and make the pragmatic adjustments necessary to resolve those problems. 12/

e. Impact of NGPA. Congress did not reduce the discretion of the Commission to set rates for old gas when it passed the NGPA. Instead, it expressly confirmed the continued authority of the Commission to conduct such ratemakings 13/ and rejected

---

10/ Southern Louisiana Area Rate Cases v. F.P.C., 428 F.2d 407 (5th Cir. 1970), cert. denied 400 U.S. 950 (1970).

11/ Id. at 418, n. 17.

12/ Mobil, 417 U.S. at 322, 329.

13/ NGPA § 104(b)(2) reads as follows:

> (2) CEILING PRICES MAY BE INCREASED IF JUST AND REASONABLE.-- The Commission may, by rule or order, prescribe a maximum lawful ceiling price, applicable to any first sale of any natural gas (or category thereof, as determined by the Commission) otherwise subject to the preceding provisions of this section, if such price is--
>
> > (A) higher than the maximum lawful price which would otherwise be applicable under such provisions; and
> >
> > (B) just and reasonable within the meaning of the Natural Gas Act.

Compare the language of § 104(b)(2) with H.R. 8444, 95th Cong., 1st Sess., §§ 405-407, 413(e)(4)(A), (1977) and S.1479, 95th Cong., 1st Sess., §§ 405, 406, 408(d), (1977).

attempts to restrict the Commission's authority or discretion in this regard. Thus, the Commission not only has the authority, but also the responsibility, entrusted by Congress, to keep old gas rates just and reasonable under current market conditions.

2. Applicability of Legal Standard to Current Conditions

The proposed action is consistent with historic Commission actions to establish just and reasonable prices. Indeed, the reasons for making these necessary and long overdue rate changes are more compelling now than they were in prior rulemakings to establish just and reasonable prices.

a. Need to Update Rates. Ceiling prices for old gas should be updated to reflect current market realities. The economic data and information concerning replacement costs, commodity costs, supply and demand, natural gas markets, conservation factors, consumer interests, and other factors that were taken into account in formulating the current rates have been overtaken by intervening events. The Commission has never exercised its authority to set just and reasonable rates for old gas under the NGPA. 14/ Escalators built into the rates for old gas by the NGPA have been wholly inadequate to offset the growing obsolescence of the information used to fashion those rates.

14/ It has been 9 years since the last national ratemaking was completed. In contrast, the FPC frequently revisited the question of just and reasonable rates for natural gas and had established a biennial cycle of national ratemakings.

Continuing to adhere to the present structure of old gas rates is a mechanical approach in light of such factors as the rising replacement cost of natural gas, increases in the prices of competing fuels and decontrolled natural gas, and changes in the natural gas market place brought on by passage of the NGPA. 15/ As the Commission has recognized in Order No. 436, a rate is not necessarily just and reasonable merely because it has been in effect for a long time.

b. Sharing of Replacement Costs. The present system of vintaged rates for old gas fails to assign a reasonable share of the replacement cost of exploring for and developing new gas supplies to the purchasers of many categories of old gas. As a result, there has evolved what has been called a "gargantuan inequity" in the rising discrimination between customers of old and new gas. 16/ Since the ratemakings were conducted that established the current system of ceiling prices for old gas, the cost of finding replacement supplies, including discovering and exploring for new supplies of gas, as well as reworking old fields and wells, has soared. Consumers of old gas today pay only a fraction of the cost of this effort even though they

---

15/ 15 U.S.C. §§ 3301-3432.

16/ Tenneco Oil Co. v. F.E.R.C., 571 F.2d at 839.

benefit enormously from the producers' efforts to replace our dwindling old gas supplies.

Moreover, in the current natural gas marketplace, consumers no longer benefit from holding old gas prices so low. Doing so always hurt their interests in secure and adequate long-term natural gas supplies. As discussed in section II-C, the adverse consequences to consumers from the artificially low ceiling prices for old gas are not offset by lower overall prices to consumers for natural gas.

c. The Zone of Reasonableness Has Increased Since the Last Ratemaking. The prices of competing fuels and gas sold in the free market have risen dramatically since the last ratemaking for old gas. On a Btu equivalent basis, these prices far exceed the ceiling prices for old gas. The Commission should take these changed prices into account in establishing a zone of reasonableness within which the ceiling price for old gas must fall. While there is no one approach to establishing just and reasonable prices, these factors certainly indicate a strong likelihood the existing structure needs revision.

d. Old Gas Supply Response. As discussed in section II-B-2, the existing pricing structure discourages the production of a tremendous volume of our old gas supply. The loss of this supply, measured in tens of trillions of cubic feet, benefits neither consumers nor producers and must be considered in judging whether the current structure is just and reasonable.

e. Unprecedented Disparities in Ceiling Prices. A review of the growing disparity between old and new gas prices confirms the imbalance of the present vintaged rate scheme for old gas. The most remarkable fact about the current system of vintaging rates for first sales of natural gas is how unprecedented are the disparities between vintages by historic standards. The historic ratio between new and old gas ceiling prices was less than 1.2 to 1 in the Permian Basin area ratemaking and the first and second Southern Louisiana area ratemakings. By providing for the gradual elimination of vintaging, the first national ratemaking would have reduced the ratio to one to one.

In October 1985, the ratio between the ceiling price of the latest vintage of natural gas whose rates were set under the NGA, post-1974 gas ($2.518), and the ceiling price for flowing gas for large producers ($.511), was about five to one. Since what was formerly "new" gas under the last NGA ratemaking is now "old" gas, it is appropriate to compare the ceiling prices of old gas and the ceiling prices of new gas under the NGPA sections 102, 103, and 107. In October 1985, section 102 gas had a ceiling price of $4.091, section 103(b)(2) gas $3.565, and section 107(c)(5) gas $6.076. The ratios between these ceiling prices and the ceiling price for flowing gas referred to above ($.511) are about eight to one, seven to one, and twelve to one respectively. Comparing the average price at which gas under section 107 has been selling in September 1985 ($4.47) with the ceiling price of the flowing gas yields a ratio of about nine to one.

f. Simplifying a Complex Rate Structure. The existing rate structure for old gas is absurdly complex and burdensome. Prices range from $.30 to $2.51 per MMBtu (the oil equivalent of about $1.80 to $15 per barrel). The structure needs simplification. The large number of current vintages for old gas, now consisting of at least 14 different pricing categories, goes against the basic trend of ratemakings under the NGA toward administrative simplicity. For example, the ratemakings for the Permian Basin and Southern Louisiana Areas established a single rate for old gas, while the first national ratemaking would have collapsed all old gas ceiling prices into a single price, the same for new gas, when the contracts for old gas "rolled over." 17/

The current complicated system of vintaged rates puts a substantial administrative burden on producers, pipelines, consumers, and the Commission in trying to track, account for, and abide by the laws governing the myriad of pricing categories for what is one fungible product. This system is an unnecessary anachronism. It makes no sense except when viewed as an accident of an historic ratemaking process that was ultimately unsuccessful in accomplishing its stated objectives of ensuring an adequate supply of natural gas for consumers at reasonable prices while providing a reasonable return and incentive for producers. It serves no rational economic purpose, and should be eliminated.

17/ Shell Oil Co. v. FPC, 520 F.2d at 1077.

g. Market Distortion Caused by Widely Varying Old Gas Rates. The present vintaged rate structure and the extreme disparities in ceiling prices it contains cause inefficiencies in the natural gas markets. This is because of the unequal access of pipelines and distributors to various categories of old gas supplies. Access to these supplies is an historic accident, yet a pipeline or distributor with greater access to the lower-priced vintages of old gas enjoys an unfair competitive advantage over pipelines and distributors whose supply mix contains a lesser share of these vintages. This distortion of the competitive situation in the natural gas markets serves no rational economic purpose and should be promptly eliminated.

3. Economic Criteria for Just and Reasonable Rates.

In proposing blockbilling, the Commission identified four criteria for determining whether a rate was just and reasonable. The Commission applied these criteria to "rolled-in" pricing and found it to be unjust and unreasonable. DOE has applied these criteria to the existing old gas price structure and believes it to be equally unjust and unreasonable.

a. Efficiency. The first criteria is that a just and reasonable rate should promote efficient production and consumption of natural gas. The economic conditions for such efficiency are well known. The price for natural gas should reflect the resource cost of producing and distributing that gas. Further, the price should ensure the value a consumer places on an incremental unit corresponds to the cost of producing that unit. Efficiency also requires the price should permit the market to clear, that is, price should be responsive to changes in both supply and demand so that quantities supplied would equal quantities demanded. Moreover, efficient prices should reflect current circumstances, not past circumstances. An efficient price is one that relates current costs with current values.

b. Fair Competition. A second condition necessary to achieving a just and reasonable rate is the rates so established should permit "fair" competition. Such competition, whether between producers or between a producer and a competing fuel supplier (either gas, oil or electricity), should reflect the current efficiency with which those suppliers operate.

c. Non-Wasteful. A third condition for a just and reasonable rate is the rate should not lead to the wasteful depletion of scarce, non-renewable resources. That is, consumers should not use up supplies of natural gas whose value to them is less than the cost of making those supplies available. At the same time, a just and reasonable price should assure adequate supplies of natural gas at reasonable cost to consumers.

d. Appropriate to Current Conditions. Finally, a just and reasonable rate is one appropriate to changing conditions in the natural gas industry. Thus, prices for natural gas should not inhibit the growth of competition envisioned by the NGPA. Nor should prices distort the benefits otherwise obtained from greater access by customers to transportation of natural gas.

e. Application to Existing Old Gas Pricing Structure. DOE believes many of the problems the Commission identified as resulting from rolled-in pricing really result from the existing old gas price structure. Blockbilling may alleviate some of these problems, but it cannot correct them. True resolution of the problems identified by the Commission requires recovery of the old gas supplies lost under the existing pricing structure. The availability of these supplies will guarantee an efficient and productive market in which our least expensive gas resources are fully developed and produced.

The current pricing structure for old gas does not establish just and reasonable prices in the context of today's market. Existing old gas prices promote inefficiency in consumption and production by distorting price signals to consumers and producers. This inefficiency, in turn, undermines the competitive forces at work in today's market.

The price signal to the consumer does not represent the resource cost of bringing additional supplies to market. As a result, consumers are purchasing excessive amounts of gas from high-cost sources. 18/

At the same time, producers are not receiving accurate market signals concerning the value of their supplies. Because of the existing price ceilings, consumers cannot offer a price

---

18/ This distortion will continue under blockbilling, albeit to a ~~somewhat~~ lesser extent.

for much of the old gas supply which represents its true value. As a result, much of our least expensive gas will never be produced. 19/

The current old gas pricing structure frustrates the attainment of market equilibrium prices. Market equilibrium prices are most easily attained when customers see the cost consequences of marginal consumption decisions. Similarly, equilibrium is more quickly reached and easily sustained when producers see unambiguous price signals as a consequence of their marginal supply decisions.

Market equilibrium prices and quantities are also severely distorted by the large disparity between the prices of old gas and decontrolled gas. Current equilibrium prices paid by consumers are higher and total domestic production is lower than would be the case if the inefficient price disparity between old gas and decontrolled gas was reduced.

Current old gas pricing encourages depletion of scarce natural resources. Customers are shown a price below the cost of incremental supplies and therefore consume greater quantities than they would if they were required to pay a price reflective of that cost. Current old gas pricing permits incremental supplies to receive above-market clearing prices. Thus,

---

19/ Blockbilling will do nothing to promote full recovery of our old gas supplies.

production is encouraged in a fashion that promotes wasteful depletion of a valued national resource. The depletion is inarguably wasteful because the cost of those incremental supplies is greater than the value consumers place on the consumption of those supplies. At the same time, as will be discussed in section II-B-2, the current old gas pricing structure inhibits the production of low cost supplies.

B. Incentive Prices

1. Legal Authority

Section 107(b) provides the Commission can increase the ceiling price for "high-cost natural gas" to the extent a higher price is necessary to provide reasonable incentives for the production of such high-cost natural gas. Section 107(c)(5) defines high-cost natural gas to be "produced under such . . . conditions as [the Commission] determines to present extraordinary risks or costs." The Commission already has exercised this authority to establish higher prices for old gas which qualifies as high-cost natural gas by reason of being "production enhancement gas."

As discussed next, there is a significant amount of old gas that will not be produced under the existing pricing structure. While the costs of producing this old gas supply are less than the costs of other gas sources, they are extraordinary because the production of these old gas supplies is economically infeasible in the context of the existing old gas price structure, even with DOE's proposed changes.

2. Old Gas Supply Response

a. Premature Abandonment. Twenty-three to 44 Tcf of old gas will never be produced under the existing old gas pricing structure. 20/ Based on this range, our best estimate is that about 34 Tcf of old gas will be lost under current regulations. Producers will abandon a well when revenues generated from its operation no longer offset the costs of production. As the well's pressure and production flow decline, revenues will decline over time. Since old gas prices and total operating costs remain relatively constant, revenues will eventually fall below costs. At that point, the well or field will be abandoned. If old gas prices were adjusted upward, producers would continue operation from a well for a longer period of time and ultimately produce more gas from each old gas well. Producers also would have an incentive to rework wells and take other actions to extend the life of wells.

NGPA section 108 allows wells producing less than 60 thousand (Mcf) cubic feet per day to receive an incentive price--currently (November 1985) at $4.43 per Mcf. This incentive price is insufficient, however, because many of the more expensive and productive old gas wells are abandoned long

---

20/ DOE, Increasing Competition in the Natural Gas Market, January 1985, pp. 133-135, Appendix C; See also Office of Technology Assessment, Effects of Decontrol on Old Gas Recovery, February 1984; Shell Oil Company, Increase in U.S. Oil Gas Reserves Due to Deregulation, April 1983.

before they can qualify as stripper gas wells. In a recent Energy Information Administration (EIA) study of abandoned wells in 39 old gas fields, more than 90 percent of the total production in the year before abandonment was from wells that were abandoned before they qualified as stripper wells. [21] Thus, only 10 percent of the production from abandoned wells was eligible for stripper incentive prices. This premature abandonment results in the loss of over 13 Tcf of old gas reserves, despite the stripper incentive provisions under the NGPA.

b. New Infill Wells. In addition to encouraging premature abandonment, the existing old gas price structure does not provide any incentives for long-term investments in projects to recover old gas supplies. New infill wells would increase recovery from known reservoirs in existing fields. Infill wells increase recovery of gas from existing fields because they are drilled at a closer spacing than originally planned and recover isolated pockets of gas or gas from low permeability formations.

Currently, there is very little infill drilling occurring in the United States. The future prospects for such drilling are dim. The price is just too low to make such drilling economic. A pricing structure which encouraged new infill wells would increase old gas reserves by about 16 Tcf.

---

[21] EIA, Drilling and Production Under Title I of Natural Gas Policy Act, June 1984, p. 109.

New onshore production wells do qualify for the section 103 price if they obtain approval under state well-spacing requirements. In most instances, the section 103 price is not sufficient to justify the investment in a new well in an existing reservoir even though the investment would be less than sinking a well in an unproven area. For planning purposes, a producer needs assurances that its investment will earn a reasonable rate of return for the life of the investment. While the section 103 price may represent a reasonable return in the near term, there is great uncertainty as to whether it would represent a reasonable return in five years or more.

c. Production Enhancement. The production rates and ultimate recovery of old gas wells also can be increased through such well-stimulation activities as (1) recompletion by reperforation, (2) repair or replacement of casing or other downhole equipment, (3) reentry into a previously plugged well, and (4) fracturing, acidizing, or installation of compression equipment.

On November 13, 1980, the Commission adopted a production-enhancement incentive rule for intrastate natural gas subject to section 105 (old intrastate gas supplies) of the NGPA. On September 26, 1983, the Commission extended the incentive provision to include interstate natural gas subject to NGPA section 104 (old interstate gas supplies) and 106 (old gas subject to rollover contracts). Using its section 107(c)(5) authority to give incentive prices to gas it finds to be "high-cost," the

Commission allowed wells using these techniques to receive the section 109 ceiling price.

The existing enhancement rule hampers production-enhancement activity in two ways. First, the purchaser has an absolute veto over whether a producer can apply to FERC to receive a price that will cover the cost of production-enhancement techniques.

Second, the section 109 price ceiling is too low to encourage as much investment in well stimulation as would be justified by the market value of this gas. The section 109 ceiling price will remain at about $2.51 per Mcf in 1985 dollars. The market value of this gas in current dollars is now comparable to the section 109 price but most likely will rise considerably above the section 109 price by 1990.

The inadequacy of the current incentive price rules is demonstrated by the small number of enhancement applications that have been filed with the Commission. From November 13, 1980, to November 2, 1984, the Commission received only 558 and approved 551 applications for production-enhancement incentive prices. Moreover, the Commission's extension of the production-enhancement provision to interstate natural gas in 1983 did not increase well-stimulation activities significantly. The Commission approved only 136 applications in 1984, compared to 111 applications in 1983 and 199 in 1982. Over four Tcf of additional old gas reserves could be recovered if adequate price incentives were available for old gas production enhancement efforts.

C. Benefits of Higher Old Gas Ceiling Prices

1. Higher Old Gas Ceiling Prices Will Not Result in Higher Average Prices.

Price controls create an incentive for pipeline companies to purchase a mix of low-cost and high-cost gas. Consumers pay an average of these prices. Price controls on low-cost, old gas allow high-cost domestic and imported gas to receive prices above the average price. The price paid for high-cost gas will exceed the average price by an amount that results in the average price matching the price that consumers are willing to pay for natural gas. The price consumers are willing to pay for gas is equal to the cost of not using gas or the price of alternative fuels. Thus, the major beneficiaries of price controls on old gas are high-cost domestic gas producers and gas importers, not consumers.

If price controls are revised to permit producers to negotiate higher old gas prices, competition will allow low-cost, old gas to receive a higher price and will force high-cost gas prices down. The prices paid by consumers overall will be lower, because low-cost gas production will increase and displace some high-cost domestic and imported gas, thus forcing down the prices of these supplies. The increase in total gas supply from an increase in the production of old gas reserves will unambiguously result in lower prices to consumers. DOE estimates that full recovery of our old gas supplies will lower average consumer prices by $0.19 to $0.55 per Mcf from June 1985 to 1995.

(2) Additional Production of Old Gas Will Provide Economic Benefits Immediately.

Much of the potential old gas supply response can be developed quickly through additional infill drilling and well stimulation. Production of this gas will begin immediately once producers are sure they will receive a reasonable return on their investment in the future.

Future increases in old gas production resulting from delayed abandonment will have an immediate effect on decisions to produce other gas reserves. Natural gas is produced over time so as to maximize the value of all gas reserves. If production of old gas reserves increases in future years, the expected future price of gas will decline. Producers react to this change by shifting production of other gas reserves to earlier time periods when relative prices are higher. This adjustment will continue until the increase in production in earlier periods lowers the price in these periods enough that there are no more opportunities to increase the value of gas by producing it sooner.

The additional old gas reserves represent an increase in the total amount of gas that will be produced for as long as gas is widely consumed. An increase of about 34 Tcf in recoverable reserves should increase total production (from both old and new reserves) in each year by about one Tcf. Increased production in each year and a lower cost mix of gas produced reduces consumer prices and provides large economic benefits.

3. Old Gas Production Increases by More than New Gas Production Declines

Higher ceiling prices for old gas will result in lower prices for new gas (and other higher cost supplies) gas in the short run. As a result, new gas reserve additions will be lower in the short run. Yet total production will still be higher, because new reserves are not lost forever. Rather, they are recovered and produced in later years when the market conditions warrant their extraction. In contrast, under the existing pricing structure, while new reserves will be produced more quickly, the old gas reserves will be lost forever. In addition, some of the less costly and less risky new reserves are produced faster as producers recognize that future prices will be lower. Therefore, the producers produce these new reserves faster to maximize the discounted value of these reserves over time.

Finally, production from old gas reserves is much higher in each year, and the production costs of these reserves are less than those of new reserves. Therefore, the economy is able to consume more gas at lower costs.

4. Increased Old Gas Production Means Less Gas and Oil Imports

The existing pricing structure restricts the domestic production of low-cost gas. To meet consumer demand for natural gas, pipeline companies must increase their purchases of high-cost domestic and imported natural gas. These supplies of high-cost gas receive a price that is well above the average price paid by consumers. For example, the average price for section 107 gas in September 1985, was $4.47 per Mcf.

By subsidizing the price of high-cost gas, artificially low old gas prices increase the transfer of economic wealth from the U.S. economy to foreign gas producers. Fuller use of our old gas reserves would remove this subsidy and the prices of high-cost domestic and imported gas would fall. Consumers would pay five to seven billion less for gas imports from 1985 to 1995 if old gas were consumed in an economically rational basis.

Artificially low old gas prices also increase our consumption of expensive and, in many instances, insecure imports of crude oil and petroleum products. Revision of the existing pricing structure would reduce our dependence on oil imports and our vulnerability to oil supply disruptions by increasing production and consumption of domestic natural gas. From 1985 to 1995, the United States would import an average of 300 to 350 thousand barrels per day less oil if America used its least expensive gas first. Assuming $25 per barrel oil, this decrease in imported oil would reduce our balance of payments deficit by $7.5 to 8.8 million a day.

III. Proposal

A. Just and Reasonable Price for Flowing Old Gas

1. Eliminate Vintaging

The proposed rule would simplify the rate structure for "flowing old gas" by eliminating the vintaging of those rates. 22/

The proposed rule would replace the existing myriad of ceiling prices with one maximum lawful ceiling price equal to the highest current ceiling price for old gas (the existing ceiling price for post-1974 gas). This price would escalate as in current law.

2. Good Faith Negotiation Rule

DOE does not believe producers should receive the new ceiling price automatically. Ceiling prices which act as price floors distort the market as much as artificially low ceiling prices. Accordingly, DOE is proposing that the new ceiling price be applicable to gas only to the extent provided for in the contract between the producer and a purchaser. In addition, in the case of contracts in effect at the adoption of the new ceiling price, the producer and purchaser by good faith negotiation must agree as to the extent the contract will operate to increase the price received by the producer. 23/ Of course, the producer and purchaser could agree to a price lower than the new ceiling price, and many will in fact do so in markets such as

---

22/ Flowing old gas refers to gas subject to the ceiling prices established by NGPA sections 104 and 106(a). The existing ceiling prices are set forth in Table II of 26 §271.101(a).

23/ DOE believes the logic of Pennzoil Co. v. F.E.R.C., 645 F.2d 360 (1981) would make the proposed new just and reasonable ceiling, as well as the proposed new incentive prices, applicable to most existing contracts. However, DOE believes both parties, and especially the purchaser, should be given the opportunity to reevaluate whether they wish the contract to continue.

the current market -- where many prices are below maximum ceiling prices. In no case could the new price exceed the ceiling price.

DOE does not believe an existing purchaser should possess a veto over new higher just and reasonable prices for old gas where such prices are permitted by the existing contract. The decision whether to establish a new price for old gas should result from good faith negotiation between a producer and a purchaser in the light of current market conditions. Accordingly, DOE is proposing that producers be given a one-time right, exercisable at any time, to request purchasers of gas under a contract in effect on July 1, 1986, to nominate the price the purchaser is willing to pay for the gas. If the purchaser refuses to nominate a price within 60 days of the request, the producer would be free to sell the gas to a new purchaser, subject to the price ceiling, and would be released from all obligations in law and contract to the existing purchaser upon 30 days notice. If the purchaser nominated the highest price permitted by the existing contract, the producer would sell the gas to the purchaser at that price. If the purchaser nominated a price less than the highest price permitted by the contract, the producer would have two options. One, the producer could accept the nominated price and sell the gas to the purchaser at that price. Or the producer could refuse the nominated price and, at anytime, sell the gas to a new purchaser which offered to pay a price higher than the nominated price for a term of at least two years, 24/ in which case the producer would be released from all obligations in law and contract to the existing purchaser upon 30 days notice. However, in the interim, the producer would be required to continue to sell the gas to the existing purchaser at the existing contract price. DOE believes this system will require both producers and purchasers to negotiate in good faith.

B. Incentive Prices

The elimination of vintaging will not result in the recovery of all old gas supplies. In many instances, the recovery of additional old gas supplies will require significant investment by producers. While this investment is less than the investment required to recover gas from other sources, the rigidities of the existing price structure make it highly uncertain whether producers will recover a reasonable return on such an investment in the future. Accordingly, DOE believes these investments can qualify as "extraordinary costs."

Certainty concerning a reasonable return throughout the life of a recovery project is especially important with respect to gas from (1) production enhancement projects, (2) new wells, and (3) existing wells with low production. As discussed previously, producers do not have sufficient incentive to invest in these

---

24/ DOE is proposing a two-year term so that producers will not be able to use a spot market price to negate their existing long term contracts.

areas under the existing prcing structure, even with the elimination of vintaging. Since investments in production enhancement projects, new wells, and existing wells with low production could yield 4.5 Tcf, 16 Tcf, and 13.5 Tcf of additional old gas supplies, respectively, DOE believes an incentive price under section 107 would be appropriate.

DOE believes an incentive price for old gas recovery projects is necessary because of their long-term nature. While the proposed new ceiling price for old gas might be sufficient to justify operation of an old gas recovery project in today's market, it would not necessarily be sufficient to justify a long-term commitment to such a project. For planning purposes, a producer needs assurances that its investment will earn a reasonable rate of return over the entire life of the project. DOE believes this need for assurance can be met by providing for an incentive price which escalates over time. In addition, an escalating ceiling price is consistent with production schedules where the least expensive old gas is produced first. Accordingly, DOE is proposing an incentive price which escalates from 60 percent of the section 102 price in 1986 to the section 102 price in 1991.

DOE does not believe a producer should receive an incentive price automatically. However, the existing purchaser veto in the production enhancement rule has had a chilling effect. Receipt of an incentive price should result from an agreement between a producer and a purchaser. The incentive price should represent a reasonable investment to recover more gas. Therefore, DOE is proposing a producer receives the incentive only upon agreement of a purchaser. To ensure meaningful bargaining between a producer and a purchaser, DOE is also proposing the same good faith negotiation rule described in connection with the proposed new just and reasonable ceiling price.

1. Production Enhancement

As discussed previously, the existing production enhancement rule has proven to be insufficient to generate this valuable activity. The existing rule, unfortunately, does not establish a high enough ceiling price to permit a producer the opportunity to receive a reasonable return on its investment in the future and creates a purchaser veto over participation. Accordingly, DOE is proposing to revise the rule to replace the current incentive price and purchaser veto with the escalating incentive price and the good faith negotiation rule.

The definition of what constitutes "production enhancement work" need not be changed. The definition of "qualified production enhancement gas," however, would refer only to where and when production enhancement work was undertaken. The other provisions of the existing definition, including the purchaser veto, would be eliminated as unnecessary in light of the proposed good faith negotiation rule. DOE believes that in today's competitive market a higher price will be negotiated only if it is economical to produce the incremental supplies.

2. New Wells

As discussed previously, DOE believes significant amounts of old gas are not being produced because of the lack of sufficient incentives for new infill wells. Therefore, DOE is proposing new wells receive the escalating incentive price, subject to agreement by a purchaser and the good faith negotiation rule.

New infill wells would be defined the same as new onshore production wells in NGPA section 103 except that (1) OCS wells would be included and (2) the qualifying date would be November 18, 1985.

3. Marginal Wells

As discussed previously, DOE believes many old gas wells are being abandoned before they qualify as stripper wells. To provide a transistion to stripper well status and thus prevent premature abandonments, DOE is proposing that gas from marginal wells receive the escalating incentive price, subject to agreement by a purchaser and the good faith negotiation rule.

A marginal well would be defined the same as a stripper well in NGPA section 108, except that "120 Mcf per day" would be inserted in lieu of "60 Mcf per day." DOE is proposing 120 Mcf as the level of production at or below which a well qualifies as a marginal well to avoid abandoning prematurely old gas wells and to increase old gas production.

IV. Procedural Requirements

Because the Commission is the agency which will take final action on this proposed rulemaking, DOE beleives the Commission is the appropriate agency to comply with the statutory requirements which arise in connection with a rulemaking. To the extent a statute requires action before the issuance of a final rule the Commission should take such action in sufficient time to permit adoption of a final rule on June 1, 1986.

List of Subjects in 18 CFR 271

Natural Gas

(The Administrative Procedure Act, 5 U.S.C. 551, *et seq.*; the Natural Gas Act, 15 U.S.C. 717, *et seq.*; the Natural Gas Policy Act of 1978, 15 U.S.C. 3301, *et seq.*; the Department of Energy Organization Act, 42 U.S.C. 7101, *et seq.*)

In consideration of the foregoing it is proposed that the Commission amend Part 271 of Chapter I of Title 18 of the Code of Federal Regulations, as set forth below.

Issued in Washington, D.C., November 18, 1985.

John S. Herrington

John S. Herrington
Secretary of Energy

Part 271 -- Amended

SUBPART D -- Natural Gas Committed or Dedicated to Interstate Commerce

1. The authority citation for Subpart D of Part 271 is continues to read as follows:

Authority: Natural Gas Act, as amended, 15 U.S.C. 717, et seq.; Natural Gas Policy Act of 1978, Pub. L. 95-621, 92 Stat. 3350, 15 U.S.C. 3301 to 3432; Department of Energy Organization Act, Pub. L. 95-91, E.O. 12009, 42 FR 46267.

2. Section 271.402(c) of Subpart D is amended by adding the following:

SUBPART D -- Natural Gas Committee or Dedicated to Interstate Commerce

* * * * *

(c) * * *

"(7) (i) Beginning July 1, 1986, the maximum lawful price for gas to which this subpart applies shall be the maximum lawful price for post-1974 gas to the extent permitted by contract and, in the case of contracts in effect on July 1, 1986, only to the extent the purchaser agrees to a higher price than would be permissible in the absence of this paragraph."

"(ii) A producer may request the purchaser of gas under a contract in effect on July 1, 1986, to nominate the price it is willing to pay for gas subject to this paragraph."

"(iii) If the existing purchaser does not respond to the producer's request within 60 days, the producer shall continue to sell the gas to that purchaser at the existing contract price; Provided that, the producer may agree to sell the gas to a new purchaser and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice."

"(iv) If the existing purchaser nominates the highest price permitted under the contract, the producer shall sell the gas to the existing purchaser at the nominated price.

"(v) If the existing purchaser nominates a price less than the highest price permitted by the contract, the producer, within 30 days, shall indicate whether:

"(A) it accepts the nominated price, in which case the producer shall sell the gas to the existing purchaser at the nominated price; or

"(B) it rejects the nominated price, in which case the producer shall continue to sell the gas to the existing purchaser at the existing contract price; Provided that, the producer may, at any time, agree to sell the gas to a new purchaser which offers a price higher than the nominated price, for a term of at least two years, and the producer shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice."

SUBPART G -- High-Cost Natural Gas

3. The authority citation for Subpart G of 271 continues to read as follows:

Authority: Department of Energy Organization Act (42 U.S.C. 7101, et seq.); Natural Gas Policy Act of 1978 (15 U.S.C. 3301-3432); Natural Gas Act, as amended (15 U.S.C. 717, et seq.); E.O. 12009, 42 FR 46267.

4. Section 271.704 of Subpart G is amended by the revision of section 704 to read as follows:

Subpart G -- High Cost Natural Gas

* * * * *

Section 271.704 Qualified Production Enhancement Gas

"(a) Maximum lawful price for qualified production enhancement gas.

"(1) To the extent permitted by contract and, in the case of contracts in effect on July 1, 1986, only to the extent the purchaser agrees to a higher price than would be permissible in the absence of this section, the maximum lawful price for the first sale of qualified production enhancement gas shall be:

(i) beginning July 1, 1986, 60 percent of the section 102 price;

(ii) beginning July 1, 1987, 65 percent of the section 102 price;

(iii) beginning July 1, 1988, 70 percent of the section 102 price;

(iv) beginning July 1, 1989, 80 percent of the section 102 price;

(v) beginning July 1, 1990, 90 percent of the section 102 price; and

(vi) beginning July 1, 1991, the section 102 price.

"(2) Requirement of completed production enhancement work. If the production enhancement work has not been completed on or before the date the application is filed, the maximum lawful price provided in paragraph (a)(1) of this section shall not apply until the production enhancement work is completed and the seller has given written notice to the purchaser stating that the production enhancement work upon which the application for determination of eligibility is based, has been completed. The applicant must retain a copy of this notice in his records for a period of three years after the month in which the first sales priced under this section occurred.

"(3) Elimination of price controls. For purposes of determining the price paid, under section 121(a)(3) of the NGPA, any amount paid solely by reason of a maximum lawful price allowed by this section shall be disregarded."

"(b) Negotiation of Price

"(1) A producer may request the purchaser of gas under a contract in effect on July 1, 1986, to nominate the price it is willing to pay for gas subject to this section."

"(2) If the existing purchaser does not respond to the producer's request within 60 days, the producer shall continue to sell gas to that purchaser at the existing contract price; Provided that, the producer may agree to sell the gas to a new purchaser and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice.

"(3) If the existing purchaser nominates the highest price permitted under the contract, the producer shall sell the gas to the existing purchaser at the nominated price."

"(4) If the existing purchaser nominates a price less than the highest price permitted by the contract, the producer, within 30 days, shall indicate whether:

(i) it accepts the nominated price, in which case the producer shall sell the gas to the existing purchaser at the nominated price; or

(ii) it rejects the nominated price, in which case the producer shall continue to sell the gas to the existing purchaser at the existing contract price; Provided that, the producer may, at any time, agree to sell the gas to a new purchaser which offers a price higher than the nominated price, for a term of at least two years, and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice.

"(c) Definitions. For purposes of this subpart:

"(1) "Qualified production enhancement gas" means natural gas that a jurisidctional agency has determined in accordance with Parts 274 and 275 meets the qualification requirements in paragraph (d) of this section.

"(2) "Production enhancement work" means an operation or installation of equipment described in paragraph (e) of this section.

"(3) "Section 102 price" means the maximum lawful price specified for Subpart I of Part 271 in Table I of §271.101(a).

"(d) Qualified production enhancement gas. For purposes of this section, qualified production enhancement gas is natural gas which is produced:

(1) From a well on which production enhancement work (other than production enhancement work described in paragraph (e)(3) of this section) was commenced on or after November 18, 1985; or

(2) From a zone that is perforated in accordance with paragraph (e)(3) of this section on or after November 18, 1985;

"(e) Production enhancement work defined. For purposes of this section "production enhancement work" means any work that is performed for one or more of the following purposes:

"(1) Reentry into a well which has been plugged and abandoned.

"(2) Reentry into a well for the purpose of deeper drilling, or sidetracing, to a different completion location.

"(3) Recompletion by reperforation of a zone from which natural gas has been produced or by perforation of a different zone

"(4) Repair or replacement of faulty or damaged casing, tubing or related downhold equipment.

"(5) Fracturing, acidizing or the installing of compression equipment.

"(6) Installing equipment necessary for removal of excessive water, brine or condensate from the wellbore in order to establish, continue or increase production of gas from the well.

"(7) Workover operations to reduce excessive water or brine production in order to establish, continue or increase production of gas from the well.

"(8) Operations to dispose of water or brine produced from the well, the presence of which prevents or severely limits gas production from the well.

"(9) Workover operations to reduce excessive sand production or oeprations to remove excessive sand from wellbore in order to continue production of gas from the well.

"(10) Injection of nitrogen gas or other inert gas necessary to establish, continue or increase production of gas from the reservoir.

"(f) Cross reference. For the rule establishing the maximum lawful price for qualified production enhancement gas which becomes subject to an intrastate rollover contract, see § 271.602(c)."

5. Subpart G is further amended by adding two new sections 271.705 and 271.706 to read as follows:

Section 271.705 Qualified Infill Well Gas

(a) Maximum lawful price for qualified infill well gas.

To the extent permitted by contract and, in the case of contracts in effect on July 1, 1986, only to the extent the purchaser agrees to a higher price than would be permissible in the absence of this section, the maximum lawful price for the first sale of qualified infill well gas shall be:

(1) beginning July 1, 1986, 60 percent of the section 102 price;

(2) beginning July 1, 1987, 65 percent of the section 102 price;

(3) beginning July 1, 1988, 70 percent of the section 102 price;

(4) beginning July 1, 1989, 80 percent of the section 102 price;

(5) beginning July 1, 1990, 90 percent of the section 102 price; and

(6) beginning July 1, 1991, the section 102 price.

(b) Negotiation of Price

(1) A producer may request the purchaser of gas under a contract in effect on July 1, 1986, to nominate the price it is willing to pay for gas to which this section would be applicable if the producer and purchaser so agree.

(2) If the existing purchaser does not respond to the producer's request within 60 days, the producer shall continue to sell gas to that purchaser at the existing contract price; Provided that, the producer may agree to sell the gas to a new purchaser and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice.

(3) If the existing purchaser nominates the highest price permitted under the contract, the producer shall sell the gas to the existing purchaser at the nominated price.

(4) If the existing purchaser nominates a price less than the highest price permitted under the contract, the producer, within 30 days, shall indicate whether:

(i) it accepts the nominated price, in which case the producer shall sell gas to the existing purchaser at the nominated price; or

(ii) it rejects the nominated price, in which case the producer shall continue to sell gas to the existing purchaser at the existing contract price; Provided that, the producer may, at any time, agree to sell the gas to a new purchaser which offers a price higher than the nominated price, for a term of at least two years, and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice.

(c) Definitions. For purposes of this subpart:

(1) "New Well" means any well:

(i) the surface drilling of which began on or after November 18, 1985;

(ii) which satifies appliable Federal or State well-spacing requirements, if any; and

(iii) which is not within a proration unit-

(A) which was in existence at the time the surface drilling of such well began;

(B) which was appliable to the reservoir from which such natural gas is produced; and

(C) which applied to a well

(1) which produced natural gas in commericial quantities; or

-(2) the surface drilling of which was begun before January 1, 1985, and which was thereafter capable of producing natural gas in commercial quantities.

(2) "Qualified infill well gas" means natural gas produced from a well that a jurisdictional agency has determined in

accordance with Parts 274 and 275 meets the definition of new well.

(3) "Section 102 price" means the maximum lawful price specified for Subpart I of Part 271 in Table I of §271.101(a).

Section 271.706 Qualified Marginal Well Gas

(a) Maximum lawful price for marginal well gas.

To the extent permitted by contract and, in the case of contracts in effect on July 1, 1986, only to the extent the purchaser agrees to a price higher than would be permissible in the absence of this section, the maximum lawful price for the first sale of qualified production enhancement gas shall be:

(1) beginning July 1, 1986, 60 percent of the section 102 price;

(2) beginning July 1, 1987, 65 percent of the section 102 price;

(3) beginning July 1, 1988, 70 percent of the section 102 price;

(4) beginning July 1, 1989, 80 percent of the section 102 price;

(5) beginning July 1, 1990, 90 percent of the section 102 price; and

(6) beginning July 1, 1991, the section 102 price.

(b) Negotiation of Price

(1) A producer may request the purchaser of gas under the contract in effect on July 1, 1986, to nominate the price it is

willing to pay for gas to which this section would be applicable if the producer and purchaser so agree.

(2) If the existing purchaser does not respond to the producer's request within 60 days, the producer shall continue to sell gas to that purchaser at the existing contract price; Provided that, the producer may agree to sell the gas to a new purchaser and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice.

(3) If the existing purchaser nominates the highest price permitted under the contract, the producer shall sell the gas to the existing purchaser at the nominated price.

(4) If the existing purchaser nominates less than the highest price permitted by the contract a price, the producer, within 30 days, shall indicate whether:

(i) it accepts the nominated price, in which case the producer shall sell gas to the existing purchaser at the nominated price; or

(ii) it rejects the nominated price, in which case the producer shall continue to sell gas to the existing purchaser at the existing contract price; Provided that, the producer may, at any time, agree to sell the gas to a new purchaser which offers a price higher than the nominated price, for a term of at least two years and shall be released from all obligations in law and contract to the existing purchaser upon 30 days notice.

(c) Definitions. For purposes of this subpart:

(1) "Qualified marginal well gas" means natural gas produced from a well that a jurisdictional agency has determined in accordance with Parts 274 and 275 meets the qualification requirements in paragraph (d) of this section.

(2) "Section 102 price" means the maximum lawful price specified for Subpart I of Part 271 in Table I of § 271.101(a).

(d) Definition of Marginal Well--

(1) General Rule.--A well qualifies as a marginal well if--

(i) during the preceding 90-day production period, such well produced nonassociated natural gas at a rate which did not exceed an average of 120 Mcf per production day during such period; and

(ii) during such period such well produced at its maximum efficient rate of flow, determined in accordance with recognized conservation practices designed to maximize the ultimate recovery of natural gas.

(2) Definitions.--For purposes of this subsection--

(i) Production Day.--The term "production day" means--

(A) any day during which natural gas is produced; and

(B) any day during which natural gas is not produced if production during such day is prohibited by a requiremnt of State law or a conservation practice recognized or approved by the State agency having regulatory jurisdiction over the production of natural gas.

(ii) 90-day Production Period.--The term "90-day production period" means any period of 90 consecutive calendar days excluding any day during which natural gas is not produced for reasons other than voluntary action of any person with the right to control production of natural gas from such well.

(iii) Nonassociated Natural Gas.--The term "nonassociated natural gas" means natural gas which is not produced in association with crude oil.

Mrs. Smith. If the price of old gas is increased via the DOE proposal, will the pipelines have increased flexibility to renegotiate their higher-priced contracts for new gas?

Mr. Sousa. Because the Commission is considering the DOE proposal and receiving comments thereon, it has made no determination whether or not the proposals would provide pipelines with increased flexibility to renegotiate their higher-priced contracts for new gas. The Commission expects that the comments of the public on the DOE proposal will address this issue.

Mrs. Smith. What is your position on legislation that would eliminate the municipal preference in hydro relicensing?

Mr. Sousa. I support enactment of such legislation to the extent it is consistent with the Commission's decision in the *Merwin Dam* case.

COMMISSION PRODUCTIVITY

Mrs. Smith. We were all so pleased by your 20 percent increase in staff productivity in FY 1984 -- I see that the increase was only 7 percent in FY 1985. Any increase is commendable, of course -- but what accounts for this sharp drop?

Mr. Sousa. The 7 percent productivity increase in FY 1985 does not represent a sharp drop but is in fact an increase on top of the 20 percent increase in productivity realized in FY 1984. I would also point out that since FY 1980, total Commission productivity has increased by 52 percent.

Mrs. Smith. Has the workload increased?

Mr. Sousa. Over the last two years, pending workload has decreased slightly. Management has been placing special emphasis on streamlining workload through improved processing techniques. However, changing conditions in the industries we regulate has resulted in an increase in complex filings which require processing on a case-by-case basis.

Mrs. Smith. Do you need to reorder your staff priorities?

Mr. Sousa. Management has the continuing responsibility of observing fluctuations in the regulated industries and adjusting workload to accommodate these changes. By using the existing management information system, we have been able to identify workload trends, and priorities have been adjusted to reflect the changing workload patterns. Two major reorganizations took place during FY 1984. First, the Office of Hydropower Licensing was formed to handle the increasing workload in the hydropower program. Second, the functions of the Office of Opinions and Review were merged into the Office of the General Counsel.

THURSDAY, MARCH 20, 1986.

U.S. NUCLEAR REGULATORY COMMISSION

WITNESSES

NUNZIO J. PALLADINO, CHAIRMAN

THOMAS M. ROBERTS, COMMISSIONER

JAMES K. ASSELSTINE, COMMISSIONER

FREDERICK M. BERNTHAL, COMMISSIONER

LANDO W. ZECH, JR., COMMISSIONER

VICTOR STELLO, JR., ACTING EXECUTIVE DIRECTOR FOR OPERATIONS

JACK W. ROE, DEPUTY EXECUTIVE DIRECTOR FOR OPERATIONS

HAROLD R. DENTON, DIRECTOR, OFFICE OF NUCLEAR REACTOR REGULATION

JOHN G. DAVIS, DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

ROBERT B. MINOGUE, DIRECTOR, OFFICE OF NUCLEAR REACTOR RESEARCH

JAMES M. TAYLOR, DIRECTOR, OFFICE OF INSPECTION AND ENFORCEMENT

GUY H. CUNNINGHAM, EXECUTIVE LEGAL DIRECTOR

RONALD M. SCROGGINS, DIRECTOR AND CONTROLLER, OFFICE OF RESOURCE MANAGEMENT

PATRICIA G. NORRY, DIRECTOR, OFFICE OF ADMINISTRATION

MARTIN MALSCH, DEPUTY GENERAL COUNSEL FOR DOMESTIC LICENSING AND REGULATION

Mrs. BOGGS [presiding]. The Subcommittee meeting will please come to order. Welcome to all of you. Chairman Palladino, you have not been before our Subcommittee since it was announced that you would be leaving the Commission in June. Please accept our belated thanks to you for all your services as history's longest sitting NRC Chairman. Commissioner Zech, we want to congratulate you on your selection by the President to be the next Chairman of NRC.

We would also like to express our congratulations to Vic Stello on being named as the Acting Executive Director of NRC. The Committee has been very pleased, Mr. Stello, with your work in the past.

We would be very happy, Mr. Chairman, to have your remarks. Any reports or remarks that any one would like to have placed in the record, with the concurrence of the Committee, we will place in the record and you may summarize and proceed as you wish.

Mr. PALLADINO. Thank you, Madam Chairman.

Madam Chairman and members of the Committee, the Commission appears before you today to discuss NRC's fiscal year 1987 budget request. With me are my fellow Commissioners, the Acting

Executive Director for Operations, the Directors of the principal offices of the Agency.

With your permission, I would like to submit our prepared statement for the record and summarize it orally.

Our budget request for fiscal year 1987 is for $405 million. This is $13 million below our fiscal year 1986 appropriation, prior to any reduction resulting from the provisions of the Balanced Budget and Emergency Deficit Control Act of 1985, Public Law 99-177, and our 1987 budget is $43 million below our fiscal year 1985 appropriations.

Our staffing ceiling is also being reduced by 122 full time equivalent staff.

Appendix A to our testimony graphically demonstrates how actual purchasing power has decreased every year since 1981. The past two years have seen the most significant reductions. The Deficit Control Act will reduce NRC an additional $18 million for fiscal 1986. A reduction of this magnitude almost halfway through the fiscal year will have a significant impact on the programs necessary to support our regulatory responsibilities.

While we recognize and are supportive of the need for budget austerity, the Congress and public must recognize that with these reduced resource levels, the NRC will be performing less regulatory oversight activities, not more. Our capability to respond to and resolve issues from unplanned events in a comprehensive and timely manner will be diminished.

For example, I want to point out the accident at the Sequoyah Fuels Plant as the type of unplanned event for which additional resources may be needed. Reduced resources severely hamper our ability to focus on such issues in a timely manner without reassigning resources fully committed to other important areas.

At the same time, many forward looking actions in programs necessary to meet future issues and challenges have been reduced or eliminated. Our prepared statement and the attached table, Appendix B, summarizes the NRC budget request by major budget categories. The reductions vary in magnitude but all major programs are affected.

Please note that the table in Appendix B does not reflect the details resulting from budget cuts due to Public Law 99-177.

With regard to the nuclear reactor regulation program, it is in transition. While demand for resources needed to review new license applications decreases, the number of resources needed to evaluate safety related licensing actions, respond to events and perform overall management is increasing with the number of reactors coming on line. Budget cuts will severely constrain our ability to resolve major unanticipated problems at operating facilities and will reduce or eliminate other improvements.

With regard to research, in terms of constant dollars, our research budget will be lower in fiscal year 1987 than it was when the Agency was formed in 1975. Between 1981 and 1987, the nuclear regulatory research program had been reduced by more than $110 million, about 53 percent. Joint programs with other parties and improved operating economics cannot make up for these reductions over the years.

The reductions in the fiscal year 1987 research budget will mean the end to some programs and significant delays or deferrals of others.

Concerning inspection and enforcement, our program will continue to emphasize on-site inspection of reactors. However, work on quality assurance initiatives, special team inspections and technical support will have to be reduced.

Finally, with regard to nuclear material safety and safeguards, we will continue to carry out our extensive regulatory responsibilities under the Nuclear Waste Policy Act and Uranium Mill Tailings Radiation Control Act and to meet other significant priorities in the nuclear materials safety and safeguards program. However, the NRC fiscal year 1987 budget request does not include resources to implement the recently enacted Low Level Waste Act amendments. We are examining where we can reprogram resources from other important activities within the Agency.

The details of our budget request are contained in the budget submission which has already been provided to the Committee. Appendix C to our testimony provides examples of NRC accomplishments in fiscal year 1985.

Madam Chairman, with your permission, I would like to submit for the record some personal observations based on my experiences as Chairman during the past four and a half plus years.

Mrs. BOGGS. We would be happy to receive them, Mr. Chairman.

[Information will appear at the end of the hearing record.]

Mr. PALLADINO. I would be prepared to summarize them, if you wish. My observations concern NRC's major goals, the future of nuclear power and nuclear regulation and some suggestions for the Congress.

In closing, let me re-emphasize that the budget request submitted to Congress represents a minimum program in the view of the Commission. We urge your strong support for the full amount of our request.

This concludes my prepared testimony aside from my personal observations.

[The prepared statement of Nunzio J. Palladino appears at the end of the hearing record.]

Mrs. BOGGS. Thank you very much, Mr. Chairman.

Do any of the other Commissioners wish to make a statement? Mr. Zech?

Mr. ZECH. I have a statement that I would like to submit for the record, Madam Chairman.

Mrs. BOGGS. Without objection, it will be placed in the record.

[The prepared statement of Lando W. Zech, Jr., appears at the end of the hearing record.]

Mrs. BOGGS. Mr. Roberts? Mr. Bernthal?

Mr. BERNTHAL. Not right now.

Mrs. BOGGS. Do you each have statements that you would like to submit for the record?

Mr. BERNTHAL. As far as I am concerned, I think the Chairman has fairly summarized my views. I have no additional view to add at this point.

Mrs. BOGGS. Thank you very much.

The Committee is aware of the NRC's attempts to control backfitting requirements and the reductions in the backlog of license applications. However, the Committee has concerns with the possible involvement of NRC in the day to day operations of the licensed nuclear power plants.

According to NRC, the number of reactors under operating license review has dropped from 56 in 1980 to 26 in 1985 and down to 6 in 1987. The NRC manpower numbers have not followed this reduction and the Office of Nuclear Reactor Regulation has remained relatively constant.

Does this mean NRC is now moving more and more heavily into the review of operating reactors?

Mr. PALLADINO. Madam Chairman, as the number of reactors that are operating increase, there is a need for additional surveillance, purely because of the larger number. In addition, experience is showing us that in certain plants there are problems that need to be addressed. We have had unanticipated instances in which we have had to respond promptly. This is requiring additional input from NRR. These situations generally require careful analysis, including analysis from NRR, and sometimes follow-up actions as well.

Mrs. BOGGS. Yes. Mr. Bernthal.

Mr. BERNTHAL. Madam Chairman, I think to illustrate very quickly, one has only to look at the Tennessee Valley Authority situation today. That is an extraordinary circumstance with operating plants, to be sure, with some plants under construction, that has now required an extraordinary allocation of resources on the part of this Agency to respond to that circumstance.

I don't remember the numbers exactly. I was astonished at the fraction of our effort that is now being devoted to that one large utility.

Mrs. BOGGS. Does anyone else have a comment to make?

[No response.]

Mrs. BOGGS. Do you foresee the NRC imposing increasingly more strict maintenance requirements on the nuclear industry?

Mr. PALLADINO. Madam Chairman, I will speak for myself. I have been urging increased attention to maintenance problems in the nuclear industry. We have seen that some of these events have involved equipment that has not been maintained or even looked at for five to twelve years in certain cases. The failure of check valves—and I am thinking of the San Onofre event specifically—complicate and exacerbate the consequences of these accidents.

I would hope and I believe the Commission is moving toward asking for more attention to maintenance.

Mr. ASSELSTINE. Madam Chairman, if I could add a comment on that. I agree entirely with Chairman Palladino's comments. We see maintenance as the underlying problem in many of the serious operating events that occurred last year at a number of the plants. It is something that clearly requires greater attention. I think the industry recognizes that as well.

While the industry has undertaken some of their own efforts in this area, I am not convinced at this time that we don't need some additional regulatory requirements to assure a uniform level of performance throughout the industry.

We still see, as Chairman Palladino indicated, instances, the San Onofre case and others, in which there has been a basic breakdown in the maintenance program, with inattention to critical equipment going on literally for years. It is an area that clearly requires greater attention both by the industry and by us at the NRC.

Mr. ZECH. If I could make a brief comment, Madam Chairman, I would agree with Chairman Palladino and Commissioner Asselstine both, that maintenance is an area that can stand improvement in the nuclear industry.

I have had an opportunity to visit 58 plants throughout the country, now, and one of my observations is that the maintenance area was an area that needed attention. I am encouraged by the initiative of the industry, itself, to get involved more in maintenance.

Some of their programs, that they have initiated, I believe are showing results. The NUMARC program, supported by the INPO program, the Institute for Nuclear Power Operations program, is also emphasizing maintenance.

So in recent months, in my more recent visits, I have been encouraged by the emphasis that the industry is giving on maintenance. It certainly is an area that is important. I think perhaps in the past it was not given the attention that it perhaps should have been given, but it is being given that attention now.

But I would agree, that there is still room for improvement.

Mrs. BOGGS. How do you think that NRC can assist the nuclear industry in improving the reliability and availability of nuclear power plants?

Mr. PALLADINO. You say how can we help? There are a number of ways that we can help. One, making sure that the utilities recognize the fact that they are going to have to give very close attention to the operation of these plants. They operate the plants, we do not. Emphasizing the need for continued maintenance.

I think the efforts that we have expended and worked with INPO on, with regard to improving training programs, I think will help the reliability of these plants.

But one thing that I have been trying to make clear to the industry, that when these events take place, we must react. We just cannot sit by and say ho hum, that was unfortunate. And reaction generally brings about more regulation.

So if we are going to reduce regulation, I think it is important that we reduce the number of events that lead to such situations. And that means careful attention to looking into such things as a scram. What was the root cause? Does it require any fixing up, either of equipment, procedures, or of training?

If there is inadvertent actuation of emergency safety features, look into those root causes.

And I think that little by little we are seeing improvement. However, some of the utilities have resisted these attempts and those are the same ones that have had difficulty in recent months.

Mrs. BOGGS. Yes, Mr. Asselstine.

Mr. ASSELSTINE. I would say there are three areas where we can help the industry, that will improve not only safety, but also improve the reliability and dependability of the plants. And many of these areas, I think, have that dual benefit, not only a benefit to safety, but also an economic benefit to the utility itself.

One of those that we talked about briefly before is maintenance. Maintenance improves the safety of the plant and it improves the reliability.

The quality of operations on a day to day basis is another area that we have not paid very much attention to in the past. But, that I think is a significant factor, in terms of the reliability and dependability of the plants themselves.

And I think the third area, which sort of underlies both of those, is good utility management.

If you have those three elements, it seems to me, in most instances you have a dependable and a reliable plant, as well as a safe plant. We have a good way to go in this country in providing that level of improvement. When you compare the plants in this country, as a whole, with other countries—many other countries that have advanced nuclear programs—we are far behind on the reliability side of things.

I think reliability and safety go hand in hand. This is an area that we ought to be working with the industry to bring about some real improvement. I think that can be done in a cooperative way that avoids perhaps some of the past problems, in terms of too prescriptive a regulatory approach. But I think it really depends upon cooperation on both sides.

We, and the industry, need to agree on the objectives that we are trying to seek, in terms of the level of performance. And then I think we need to agree on the detailed elements of a program that will help us get there. And then we, at the NRC, need the ability to make sure that all of the utilities are making satisfactory progress in meeting that objective. And where they are not, we need the ability to take action to bring the ones that are lagging behind up to an acceptable level of performance.

Mrs. BOGGS. We understand that a utility proposed a reduction in the Emergency Planning Zone and that you have told them the request is premature because it relies on technical information still under review by industry and the NRC. What is the schedule for the completion of the review?

Mr. PALLADINO. Madam Chairman, I think you are referring to the work that we are doing on what we call source term, the distribution and disposition of fission products in the event of an accident.

There has been a lot of work done. However, there still is more work to be done. In the work that has been done, it shows that under certain circumstances, certain fission products are released to a less amount than was predicted by earlier work.

But also, it shows that some of the radio-isotopes are released in amounts as great as—and I think that if I recall correctly, in the table that I was looking at—some of them are actually above those that we had predicted.

So it is going to take completion of some of our research work. It is difficult to give you a time table but maybe my staff would be willing to stick out its neck.

Mr. STELLO. Victor Stello. We expect to have the basic report, with the underlying science, finished sometime late this summer, probably August. Prior to issuing that final report, we will then be able to start, in parallel, when the technical work is finished, reviewing and evaluating that specific request.

We feel that it is very, very important not to start the evaluation of exemption requests such as this one without having finished the underlying science to where we are satisfied that we are ready to agree to the methods and the use of this technology in a comprehensive way, after it has adequate public comment—there has been a substantial number of comments already received—and they have been adequately analyzed before we are ready to proceed, using that information.

Mr. BERNTHAL. Madam Chairman.

Mrs. BOGGS. Yes, Mr. Bernthal.

Mr. BERNTHAL. If I could make just one comment about the request that was lodged by the nearby utility, I think it is fair to say that the request for a reduction, a contraction, of the Emergency Planning Zone was premature, to say the least. But I would also just say that that, it seems to me, is a higher threshold consideration for the Commission than a matter that we could be beginning to consider I think now, today—and that certainly will consider in more detail when the report that Mr. Stello refers to becomes available this summer is a review of this agency's emergency planning policies within that Emergency Planning Zone, which is characteristically ten miles. That is an important point and I think the data already are available and we expect that with the staff report, this summer especially, we should look very carefully now at whether we are doing the scientifically sensible and justifiable thing in our emergency plannng policies within that ten mile zone. And that is a rather different thing than asking up front to contract that ten-mile zone, which it seems to me is a higher threshold consideration.

Mr. PALLADINO. Madam Chairman, I just wanted to check with Mr. Stello. I believe the staff is looking at various scenarios that would involve source term, to make sure that the emphasis of our research program is on areas that would be helpful in modifying our practices.

Mrs. BOGGS. The General Accounting Office recently released a report that praises the backfitting rule promulgated by NRC. Their report documented NRC staff mandated modifications to nuclear power plant equipment and operating procedures that actually diminished plant safety in many cases.

Will you comment on that report, please?

Mr. PALLADINO. Madam Chairman, I was pleased to see the new backfit rule instituted and it is being implemented. It does provide disciplined approach to imposing additional requirements. It does require cost-benefit analysis and it does place the responsibility for controlling backfitting in the hands of the EDO, something that I did not appreciate was lacking early on.

There is an important question that was raised by Commissioner Asselstine, and that is he believes our backfit rules should also apply to relaxation of requirements as well as the imposition of new requirements.

And the Commission, after reflecting on it, has expressed its feeling that yes, we should impose the same kind of discipline on relaxation as we do on imposing requirements. We have so instructed the staff and they are implementing the Commission's desire. However, I think Commissioner Asselstine believes we should codify that aspect of our requirements as well as the requirements on imposition. He can speak for himself on that.

Mrs. BOGGS. Thank you.

Mr. ASSELSTINE. Madam Chairman, I would just say briefly on the backfit rule, I still have concerns about the backfit rule, not withstanding the GAO report. My concerns are that the threshold for imposing a new safety requirement is quite high and the process that is mandated by the rule tends to skew the analysis towards not imposing a new safety requirement.

I would be the first to admit that in the past there have been some instances in which questionable requirements had been imposed on an individual case by case basis. And I think there is a need for a more disciplined process. And if you are going to have a disciplined process, it ought to apply even-handedly. It ought to apply just as much to relaxations of safety requirements that now exist as it does to imposing new safety requirements.

I think, as a practical matter, the Commission's backfit rule is, over the long term, going to have a negative effect because I think the consequence will be some needed safety requirements will not be imposed, at least until something fairly serious happens at the plant, such as a significant operating event.

The consequence, in my view, is likely to be more significant operating events in the future. We saw a fair number of those in 1985, but I think experience over the next few years will tell whether I am right or whether my colleagues are right on the issue.

Mr. BERNTHAL. Madam Chairman, I will not comment in detail. My colleagues cringe every time I start to talk about the backfit rule, because I have probably dissented as sharply on what the Commission did at the 11th hour, in promulgating that rule, as I have from anything that we have done as long as I have been on this Commission.

I was in complete agreement with what we intended to do on that backfit rule, right up until the very end. But at the very end the Commission stuck in the provision—I think an ill-considered provision—that that rule was going to apply to the Commission's rulemaking authority.

Now that may seem like an arcane point but what that ultimately means is that we have now imposed upon ourselves a rule that would appear to supersede the Administrative Procedures Act.

And I am sorry. I simply cannot agree with that. I am accused, while normally being an analytical person, of going non-linear, as they say in the trade, on this issue. And I will not comment at greater length.

But I think that was a serious mistake. To point out one example, and there are many already. I would just submit for your consideration, how difficult it would be to apply a strict cost benefit—or any kind of cost benefit consideration—to a matter, for example, involving human factors, like fitness for duty, i.e., policy on drugs and alcohol.

It is extremely difficult to apply that kind of analysis to almost any circumstance, any rulemaking involving human factors. And that is the reason—the single reason that I dissented from the majority on this matter.

Mr. **Zech**. Madam Chairman.

Mrs. **Boggs**. Yes, Mr. Zech.

Mr. **Zech**. If I may make a few brief remarks, I supported the backfit rule as a very important step forward in bringing discipline to our whole system. NRC needs discipline and the industry needs discipline, too.

The backfit rule is a very important step in that direction. I do not have any concern about whether or not we can institute any safety measures we want to. The backfit rule will not preclude us from doing that.

Commissioner Bernthal's interpretation is different from mine. I have no qualms about being able to do what we need to do. I believe our legal folks have advised us that we can do what we need to do. I have no concern about the backfit rule. It is a very important rule.

It brings a very important part of discipline to our system. It elevates the decision making process to the EDO, where it ought to be. He is involved where he has not been, I found out, in the past, on all backfitting modifications that were imposed.

Some of the backfitting that we have done, in my judgment, has indeed very likely brought a negative safety measure to our plants. It has certainly not necessarily improved them, in my judgment.

So I think the backfit rule is solid, it is in place. It is a very positive step forward and I strongly support it, without any reservation of being able to do what we have to do to provide safety for our plants.

Mrs. **Boggs**. Commissioner Roberts.

Mr. **Roberts**. Commissioner Zech very accurately reflects my comments.

Mr. **Bernthal**. Let me just read, if I may, the words here and leave it at that.

Here is the way we defined backfitting. I will not read it all. But within the definition is the following: "The design approval or manufacturing license for a facility or the procedures or organization required to design, construct, or operate a facility"—now the key—"any of which may result from a new or amended provision in the Commission's rules."

Now that is the problem. Everything that follows that, the imposition of regulatory staff position, interpreting the rules that are new or different, all of that stuff—involving our ability to discipline our own staff—was always there and that is what we needed.

If we cannot discipline *ourselves* in promulgating rules, then I do not think this backfit rule is going to help us out. And all I can say is that I predict that this rule will be changed within two or three years to exclude our own rulemaking from the process.

But we will see.

Mr. **Palladino**. Madam Chairman, regardless of the criticisms mentioned, the backfit rule is a critical step forward.

Mr. **Bernthal**. It is indeed. I don't disagree with that point.

Mrs. **Boggs**. Are you satisfied that the NRC Staff understands the intent of the majority of the Commission regarding interpretation of the backfit rule?

Mr. **Palladino**. I think the Staff understands what the Commission wants and has been, I think, carrying out programs to make sure that the people throughout the organization appreciate what's involved.

Mr. **Stello**. Maybe to add a few points might be helpful. We are doing two things. We have had one set of meetings where we've gone out to all the regional offices and all the program offices, have explained the implementing manual chapter that implements the backfit rule to a large fraction of the staff, probably on the order of 50 or 60 percent of the staff.

Since the Commission has now promulgated the final rule, we are going to go around again to all of the regional offices and principal staff offices, as well as hold workshops with the industry to assure that everyone understands what is to be done in implementing that rule.

I am completely confident that when we are finished, we will be understood by both everyone in the staff as well as in the industry.

Mrs. **Boggs**. You anticipated my next question. Thank you.

Yes, Mr. Asselstine?

Mr. **Asselstine**. Madam Chairman, I would just add one point. I think that the staff has gotten the message of what the majority wants on backfitting. I don't think you should have any doubts or reservations on that score.

On occasion, I have been critical of the staff for not going as far as I think was needed in trying to identify and correct problems early on at some of the plants, when in hindsight when something serious happens, it is clear that something more should have been done.

I think as a result of the backfit rule, the establishment of the Committee to Review Generic Requirements over the past few years and the direction that the Commission is giving the staff, that in the future the basic responsibility for those judgments really has to rest with the Commission.

It is somewhat unfair to criticize the staff for their failures to require more in some of these areas when, in fact, that's the message that they are consistently getting from the Commission.

Mrs. **Boggs**. Thank you very much.

There are other questions, but I would like now to ask Mr. Myers to have his hand at questioning.

Mr. **Myers**. Thank you, Madam Chairman, and members of the Commission. Chairman Palladino, since this is your last appearance before this committee, we wish you well in whatever endeavor you undertake next.

We also wish the new Chairman, Mr. Zech, good luck, too.

Mr. **Palladino**. Well, thank you for your best wishes.

Mr. **Myers**. In some years past when you have come before this subcommittee, it hasn't always been too friendly an experience, as some of us remember.

Admiral, you weren't around some of those years, but the NRC was not doing anything except dragging its feet. It became a rather adversarial experience. And fortunately—no, unfortunately, it's not that way this year, only because you're not doing anything. You haven't had any new license applications to act upon have you? You still have a lot of old ones hanging around, and some other old problems, of course.

But you say in your prepared testimony that there will soon be 100 nuclear plants in operation. How many do we have now?

Mr. **PALLADINO**. 99.

Mr. **MYERS**. We have 99 plants?

Mr. **PALLADINO**. Yes, licensed.

Mr. **MYERS**. And how many reactors?

Mr. **PALLADINO**. I'm talking about reactors. I may not use the words the same way——

Mr. **MYERS**. How many sites do you have, nuclear sites?

Mr. **PALLADINO**. I think it's 57; yes, 57.

Mr. **ASSELSTINE**. Pretty close to 60.

Mr. **MYERS**. One inspector could look at several reactors then.

Mr. **PALLADINO**. Well, generally inspections are done in different ways, and maybe I should turn that over to the Director of the Office of Inspection and Enforcement.

Mr. **MYERS**. You might want to add this for the record.

Mr. **PALLADINO**. Well, we have increased the number of resident inspectors. That's one way, and, I think, a very effective way of maintaining oversight.

Then we send inspectors on routine inspections at times. Then we require special inspections. So in some cases, they can cover more than one plant at a site, but often it's plant-specific.

Mr. **MYERS**. Well, very frankly, most of your testimony was pertaining to the cuts that have been brought about by Gramm-Rudman. I think all of us have problems with that. Most of us didn't even vote for it, but we have to live with it. How are you going to be able to do your job. You spent more time, in your prepared text, complaining about what you're going to have difficulty in doing.

As an example here, you say about 600 or 700 more licensing actions are anticipated for operating plants in fiscal year 1987 than were actually seen in fiscal year 1985. Why is that? I don't think you made that one clear.

Mr. **PALLADINO**. That's because of the increased number of plants, largely.

Mr. **MYERS**. Well, how many more do you have in 1986 than you had in 1985?

Mr. **PALLADINO**. I think we licensed ten in fiscal year 1985, and I think we've licensed three so far in 1986.

Mr. **MYERS**. And there are 600 to 700 more actions anticipated?

Mr. **PALLADINO**. Well, I think normally we're talking about 2,500 to 3,000 actions every year. Maybe I ought to ask Mr. Denton to address that.

Mr. **DENTON**. My name is Harold Denton. The action items come from things such as the increased need to store fuel at the plant. The waste management bill to store fuel under DOE auspices is still in the future. Therefore, plants often have to change the configuration of the fuel storage pool to increase storage capacity. Also, a licensee may want to change the design of the plant to make it more reliable, change some of the fundamental operating parameters, replace the piping when it cracks, replace broken pump shafts, or redesign systems. So there is a continual flow of upgrading at the plants, based on their actual operating experience.

That's what results in the actions that change the original design basis of the plant.

Mr. MYERS. Well, we're all concerned about safety, but when you look at the whole picture, the number of reactor years we've operated the number of reactors in this country, haven't we had a phenomenal safety record. I don't think we can rest on that. We have to continue to be concerned. But what disturbs me, you're still going back, "to continue working on unresolved and high-priority generic safety and human factor issues."

After all of these years of experience, we still spend millions of dollars looking at generic safety issues.

Mr. PALLADINO. Well, Mr. Myers, I think it's appropriate for us to look at generic safety. But with regard to unresolved safety issues, I think—Harold, check me on this—but I think we're down to five remaining unresolved safety issues for which a draft resolution has not been made available for public comment. And they are significant. For example, station blackout is an issue that utilities sometimes don't want to talk about, but we've had some very significant station blackout situations. We've also had loss of power that led to significant events.

I think our experience tends to confirm that the attention we're giving to generic matters is paying off. Otherwise some of these incidents would be very difficult to cope with without the thought process and the analyses behind the resolution of safety issues.

Now, Harold, you might want to add more to that.

Mr. MYERS. This led me to think that if you're going to spend a lot of money examining new, unresolved, high-priority generic safety issues, I wonder how much money that's going to take. We've been operating these reactors for many years, and at some point we ought to know what the boundaries are and what the requirements are.

Is it going to take a lot of money to do this? Isn't this ongoing all the time?

Mr. PALLADINO. To a certain extent.

Mr. DENTON. Mr. Congressman, we spend several million dollars a year on what we call the high-priority generic issues. The technology is not mature in some areas. It takes, I think, longer than the 25 years that we've been operating these plants to fully understand it.

Often we try to capitalize on the experience of other advanced countries, such as France and Japan, and we are involved in corroborative research and work with them to be sure that the plants are reliable and safe. And it's my opinion that the plants are getting more reliable and safer as a result of this experience.

But there is still an operating problem or two every year that requires a lot of Commission attention, and often these events are the ones that force us to examine some new aspect.

Mr. BERNTHAL. Mr. Myers, one comment that I think—I hope deserves mention is the fact that if your question and comment implies or asks whether we hold this business and this industry to a higher standard—and I don't say we, the Commission; I think in this case it's we, the American people—than we do other energy generation systems, for example, I think the answer is unquestionably yes. If you look at the track record of this industry, as you point out, in terms of public health and safety, it has been extraordinary from the inception of the industry.

I don't need to go through the statistics. Basically there has been no life lost as a direct consequence of nuclear power plant operations in this country. There has been a substantial economic loss in one case, as we all know. But we are holding the business to a higher standard, I think, than we are other energy generation forms.

We also, however, regulate to uncertainty, and I once was—had a member of the industry or the ACRS—I can't remember which—differ with me rather sharply on whether we really do that. Well, there's no question. We regulate to uncertainty, and there are uncertainties in this business, particularly associated with some of the generic safety issues.

I don't think we're doing a very good job of explaining to the Congress what we're doing in these generic safety issues area, and I wish we could do that better, and I hope we will in the days to come.

Mr. MYERS. Well, with the years of experience that we have in this nation operating nuclear reactors, I wonder why there's uncertainty. That's what the thrust of my question was.

Why is it necessary to keep searching these generic questions when we've been operating safely for so many years? Even with the tremendous economic problem we had at TMI, it still was operated safely in the end. No one lost their life. No one received an excessive dosage of radiation. Has anybody in the world? Other countries have operated for years. Have anyone ever had a serious problem operating commercial reactors?

Mr. DENTON. One point I would like to make, Mr. Congressman, is, if our plants were standardized, it would be an easier problem.

Mr. MYERS. I'll get to that.

Mr. DENTON. And many of the generic issues that we're working on apply to certain classes of plants, and the safety problems are larger for certain classes of plants. So we're beginning to whittle it down to just those unique sorts of issues.

Mr. MYERS. But you've got a might small knife. You aren't whittling very fast. [Laughter.]

And this committee is concerned about that.

Mr. Asselstine, you mentioned a moment ago the comparison of the U.S. nuclear industry, with other countries, we were behind.

Mr. ASSELSTINE. That's right.

Mr. MYERS. Could you explain that just a little bit more.

Mr. ASSELSTINE. Sure. In terms of reliability and availability of the plants, other countries that have advanced nuclear programs—France, West Germany, Sweden, Japan—have substantially higher capacity factors, availability factors for their plants. We rank about on a par with Spain, as I understand, in terms of the reliability of our plants.

Mr. MYERS. Now define "reliability."

Mr. **Asselstine**. The amount of time during the year when the plant is available for operation.

Mr. **Myers**. How about safety?

Mr. **Asselstine**. I'd say that there are some features in some of the European plants, both for the new plants that they are building and for the existing plants in some instances, that provide added margins of safety.

I will give you one example. One of these unresolved safety issues that Chairman Palladino mentioned is station blackout—that is, the ability to ensure that you still have electrical power to run the safety systems if you get into a problem at the plant. That's a fairly important item. That's why we have not only offsite sources of electricity, but emergency power supplies on the site.

The French have gone one step farther. They have standardized designs. They are able to make a decision fairly quickly and carry it out to ensure that their plants will be able to survive the total loss of electricity for a period of about three days.

Now our plants, many—most, in fact—I'd say virtually all of our plants can't meet that kind of a standard. That is an additional margin of safety or level of protection that their plants have now built in that ours don't have.

We are considering a station blackout rule. Our rule is much more modest than what the French have done, but it is a step towards assuring reliability and availability of these emergency power supply systems.

An interesting question is whether our rule, even more modest than what the French are doing, will survive the backfit test, and we'll have to see that over the next few months. But that's an example of some of these issues that have been around awhile.

I think really on the unresolved generic safety issues, we really are trying to close out and put to rest the ones that have been around for a long period of time.

Mr. **Myers**. Of course any time any one of our generating facilities shuts down for even one hour, it gets play in the press. There is an implication that there is a serious problem. It excites people, and I guess excites you folks, too, because somehow it gets on the front page of every major paper.

In our experience, talking to other countries, no other country has any regulatory agency with near the authority power that the NRC has. Now you are saying that they are way ahead of us. Is it because of you that we are not caught up with them?

Mr. **Palladino**. Mr. Myers, I think we should put this thing in perspective. In the past year I was in Japan and learned a little bit about their steps to get good reliability. They did not start this industry in Japan with the kind of capacity factors they have now.

As a matter of fact, they were very low. And they get quite concerned about the number of scrams and the number of outages that they were having. So they made a concerted effort, industry-wide, to improve it. And among the things that they did was set a period of time for operation, and then a significant period of time for outage. And in those outages they went through and they checked everything. They took components that could be disassembled, and disassembled them and made sure that they were properly maintained.

They also spent a great deal of time in making sure that their people understood the causes of some of these scrams and inadvertent outages, and thereby they were able to bring their capacity up quite a ways.

Now some of our utilities have shown an interest in what the Japanese have done and are trying to emulate them, and I think they can be successful also. INPO is likewise trying to help the whole industry bring the level of capacity factor up in the United States to a higher level.

Mr. **Myers**. It does seem strange to me that other countries are ahead of us in reliablity and safety, as you have just testified.

Mr. **Palladino**. I didn't say that the safety was ahead of us.

Mr. **Myers**. I think, though, one of your Commissioners did; Mr. Asselstine made that remark when I questioned him, and yet they don't have near the regulatory authority that you have. And I wonder if you are really counterproductive. Are you going too far? You're in their hair all the time so they can't do the things they'd like to do to make it safer in this country.

You know, we've talked about standardization for years——

Mr. **Palladino**. Mr. Myers, I'm quite——

Mr. **Myers**. Before you people came, we talked in this committee about standardization. We're still not there.

Harold, you know, you've been around here longer than any of them. We've talked about the standardization of design, of operation, and maintenance, we still are not there. Do other countries have standardization which we don't have?

Mr. **Palladino**. Mr. Myers, the United States runs differently from other countries.

Mr. **Myers**. I know it does.

Mr. **Palladino**. We don't go out and mandate that, General Motors, you will have X standardized models of cars. We encourage it, we—what's that? I'm sorry.

Mr. **Myers**. We are getting awful close. We tell them that there are safety standards and mileage standards.

Mr. **Palladino**. Well, but we set the standards, we set the expectation, but the standardization comes from the industry when it sees the benefits of it, and I think they are beginning to see it. Unfortunately we got committed to a whole series of almost custom-made designs. And the big problem has been the balance of plant.

The nuclear steam supply systems have had, I think, pretty close standardization, but the balance of plants have been so diverse that almost everything you do involves a different design. And the balance of plant, we're finding out more and more, is the source of many of the problems that this industry faces. Auxiliary feedwater pumps, integrated control systems—I don't have to list them.

Mr. **Myers**. You used General Motors in an analogy here, and I will, too. If General Motors, Chrysler or Ford had to come to NRC to license their automobiles, we'd still be driving a Model T and not very many of them.

Mr. **Palladino**. Well——

Mr. **Asselstine**. Mr. Myers, let me add a couple of points.

To a certain extent, at least on the hardware side, I think you're right that there's been a very prescriptive regulatory program in this country, probably more so than in some of these other countries that have very successful nuclear programs on the hardware side, and on design questions. And I think there was an attitude in many utilities prior to Three Mile Island in particular that, well, the NRC has looked so hard at these things that we'll just rely on what they've done. And if they don't think we have to do more, we won't do more.

Now that attitude changed, I think, at many utilities after TMI, but it didn't change in some others. I think there are still residues of that in some utilities.

But some of these other areas that Chairman Palladino just mentioned are not areas that we have been heavily involved in in the past. Maintenance is a very good example. We don't have detailed maintenance requirements. You can't find maintenance requirements in our regulations other than, I think, generally in terms of assuring an adequate level of quality. But that's an area we have not been heavily involved in, in the past, and it's an area that the utilities themselves have neglected.

If you look at the Japanese, unplanned shutdowns of the plants are very big deals in Japan. And if one of those occurs, you have a team of people from the reactor manufacturer that come out to support the utility. They thoroughly analyze it and evaluate it.

In the past I think both we in government and the industry in this country have treated those things a bit too cavalierly. That's why the rate of these unplanned shutdowns in Japan is one-tenth of what it is in this country. We need to develop a philosophy on the part of the utilities that is more attentive to the need for more attention in areas like maintenance and that recognizes not only the safety benefit, but the economic benefit as well. And I think a more cooperative approach between us at the NRC and the industry would help move things along.

Mr. MYERS. Well, standardization would certainly help.

Mr. ASSELSTINE. It certainly would.

Mr. MYERS. You haven't developed standardization—and I think NRC is going to have to do it. I don't know how we can compel you to. How we can encourage you to do it any more than we have. With regard to safety, we are not suggesting that you make tradeoffs, but at the same time you are concerned about safety, we ought to be concerned about getting more plants on line. It seems to me that the light water reactors have the most problems. What research are you doing now in alternatives to the light water reactor, such as the gas-cooled and the other alternatives? Would that make it any easier to get standardization?

Mr. ASSELSTINE. Mr. Myers, as a result of some recent decisions by the Commission on what to do about the budget, I think that program is pretty near dead in terms of NRC review. The Commission just voted to take out most of the money for the remainder of fiscal year 1986.

I happen to think that is a mistake, and I think Commissioner Bernthal agrees with me, that we ought to be looking at some of these advanced technologies that offer the promise of good reliability, good safety, and simplicity in terms of design and operation and maintenance. These attributes would make the plants easier to deal with and easier to operate than the large complex light water reactors that are all different in this country that we are trying to operate now.

Mr. BERNTHAL. I would comment, as you may know, that's been one of my favorite subjects since I joined the Commission. And in fact, we have come a long way in this area. I recall when I joined the Commission, it had been the long-standing policy of this Commission basically never to comment, to refuse to look at, a design in a preliminary form that an outside agency or vendor or any entity—perhaps a bright professor from a university or someone—might bring in, and say, "This is a better idea. I want to know what you think about it." We simply had no policy to deal with that circumstance and, in fact, there were members of the Commission that were convinced that we should not do such things.

Well, we are on the threshold now—I believe there has been a complete change of mind, change of heart, in that regard and we will soon have an advanced reactor policy statement to match what I think our responsibilities should be in this area. But it is true that the budget has essentially been zeroed now for this effort within the agency, and in particular the Department of Energy had asked that we respond in a timely manner and give our view of the safety considerations, the safety characteristics of the modular HTGR systems, for example, that are being worked on today.

If I recall, Harold Denton had the unpleasant duty of informing DOE that we apparently are going to be unable to do that in a timely fashion, at least as quickly as they would like.

Mr. MYERS. Doesn't DOE pay you for that? Isn't it reimbursible?

Mr. BERNTHAL. No, I don't believe they do. Maybe we ought to bill them. That's a good thought.

Mr. MYERS. Well, I have one last question.

Did you have something, Mr. Chairman?

Mr. PALLADINO. Well, I wanted to say we haven't cut to zero the people that are in the position to evaluate proposals, if we get a proposal for evaluation on the gas-cooled reactor.

I also feel that it should be emphasized that we are not the designers and builders of plants, so I don't think we are in a position to mandate that there be only one standardized plant.

Mr. MYERS. Well, I am not suggesting that you should do that. But if you say, "Here is a standard approved design and you want to get one on line in a hurry, this is the way to go. If you want to go the other way, we'll look at it." I may not like it, but at least I know I can get that licensed and get it in operation in less than 20 years.

Mr. PALLADINO. I think that's the thrust of what——

Mr. MYERS. That's their option to decide. I am not suggesting you say that's the only one we will accept. But you would at least have a standard design. In all the years that the Chairman and I have been on this committee, we've been urging you and your predecessors to do this. You would certainly help the industry and help the American consumer who is already paying so much for utilities.

Mr. PALLADINO. There was a 1977 policy, I think, or 1978 policy on standardization. We are reviewing that, and I think the thrust of our new policy, which I hope will be issued before I leave this commission, I think will help the situation greatly.

Mr. MYERS. You're not taking the plans with you, are you?

Mr. PALLADINO. No. I encourage my fellow Commissioners to follow through.

Mr. MYERS. One last question. You speak about you're probably going to have to cut it. We have inspectors that go into meat processing plants. The plant has to pay them. Is there any proposal that the utility will pay you for your inspection and you charge a user fee?

Mr. PALLADINO. Well, Mr. Myers, as you know, we do collect fees——

Mr. MYERS. For licensing

Mr. PALLADINO [continuing]. For what are called services for license inspections, and that, we expect this year, will provide about $60 million.

Mr. MYERS. Where do we find that in your budget?

Mr. ASSELSTINE. It's paid directly to the Treasury.

Mr. PALLADINO. It's paid directly to the Treasury. We don't get it, but it helps offset some of the costs that——

Mr. MYERS. Do you know what it is? Can you provide for the record how much does go into the Treasury?

Mr. PALLADINO. I think last year it was about $80 million. This year it's——

Mr. MYERS. If you don't have it, you can put it in the record.

[The information follows:]

The receipts deposited in the U.S. Treasury during fiscal year 1985, totaled $81,660,153. This included collections for license fees and civil penalties. The estimates for this year (FY 1986) is $60,000,000.

Mr. PALLADINO. Okay. Thank you.

Mr. ASSELSTINE. Mr. Myers, there are broad proposals that go beyond that. The Administration has proposed a user fee. The Budget Reconciliation Act last year included a user fee. We are on the hook to provide a report on the Senate side by April 1st on our reactions to those user fee proposals and what kinds of elements we think ought to be in that. I am sure we could provide that report to you.

Mr. MYERS. Could you send two letters? The same one you send over to——

Mr. ASSELSTINE. Absolutely.

Mr. MYERS. Fred.

Mr. BERNTHAL. If I could make a short comment——

Mr. MYERS. Go ahead.

Mr. BERNTHAL. I think the subject of user fees may deserve some further comment and may get some as we go on here. I want to make clear that at least for my part, I have a great philosophical predisposition in favor of the concept of earmarked taxation. And make no mistake about it, this is a tax. It's going to be a tax imposed on the ratepayer.

I am concerned about the trend that is developing here, though. We thus far have imposed a tax on the ratepayer to take care of the Nuclear Waste Policy Act requirements. Well and good. There is serious talk about imposing another tax on the ratepayer to support the provisions of the Price-Anderson Act renewal, which we all hope and trust will come forward this year.

Now we are beginning to talk about a third imposition of a tax on the ratepayer, if you will, to support the broader operations of the NRC.

Now philosophically that is fine with me. I don't know whether there are any truckers here, but the thing that concerns me is that there be a level playing field, and the day that the people who do the damage to the highways or the people that burn coal for power generation pay for the expenses in EPA and elsewhere—generally speaking, the day when there's a level playing field in this area—is then the day when I will wax more enthusiastic about the user fee concept for the NRC.

Mr. **Myers**. Well, our philosophies are very similar in many respects. However, the government now is paying this and we are already in the huge deficit that we are trying to whittle down, using your analogy. Those ratepayers are also taxpayers. It's a lot more costly, in my judgment, to send funds in to Washington and have all of us watching and taking something off of it, than for the ratepayers to pay directly. And maybe it would be a little more difficult for you, if you have to justify to the utility company why you're charging so much.

I used to be a country banker. The examinations we had, we always had to pay for them. I thought some of the costs were terrible. I'd always argue with them and send letters in frequently to the FDIC about the tremendous costs, because it was unjustified. And I think because of that we had better examinations and more pointed.

So I see nothing wrong basically with the user fee.

Mr. **Bernthal**. I don't either. It's a good idea, but I think that it ought to be a level playing field, and that we should not single out this industry for something that we are not willing to single out other enterprises for.

Mr. **Palladino**. Just one comment on user fees. I hope that if the Congress does proceed in increasing user fees, at least for the NRC, that it be a relatively simple approach, one that will not add a great deal of regulatory burden to the NRC, and one that will give us up front what our budget is going to be. So that we don't have to try to juggle what's coming in against what our budget expenditures have to be.

Mr. **Myers**. I respect the job and the responsibilities you people have. I am concerned, as are a lot of other members, about who you have to answer to. We all have to answer to someone. You do have somewhat of a free hand. I am not at all sure that is always in the best interest of the American consumer. There ought to be somebody you have to answer to and if it isn't us, I don't know who else it is.

Mr. **Palladino**. It is you.

Mr. **Myers**. There is no one else. Our review should be more how you spend the money and not on policy. I am always disturbed when we have to get into policy but I think we have to on occasion.

Mr. **Palladino**. I was making these comments in light of the fact that the Congress will be deciding what ought to be done on the user fee matter.

Mr. **Myers**. I apologize to my colleagues for using so much time. You have some guy back there all dressed in green. Is he with you?

Happy Birthday, Carl. It seems like I have seen that uniform before.

Mr. PALLADINO. Every year.

Mr. MYERS. We had military in the other day and the Army wore green that day for St. Patrick's Day but the Navy and Air Force didn't. Happy Birthday. Thank you for your testimony.

Mr. BEVILL [presiding]. Mrs. Boggs.

Mrs. BOGGS. Thank you, Mr. Chairman. I have several questions I will ask for the record.

Will you please discuss operating experience to date for the Waterford III facility? How would you characterize this experience in comparison to other facilities?

Mr. PALLADINO. Let me call on the staff to respond. Mr. Taylor?

Mr. TAYLOR. I am James Taylor, Director of the Office of Inspection and Enforcement.

At Waterford, the last systematic assessment of their performance showed they were doing acceptably. The need for improvements was noted in the areas of maintenance and operations.

Mrs. BOGGS. Are there any outstanding safety issues related to Waterford?

Mr. TAYLOR. There are no major safety issues that I am aware of or have been reported by the Region. They are having the typical types of problems in areas such as maintenance, but none has reached the area where we have major issues right now with that utility.

Mrs. BOGGS. Commissioner Bernthal.

Mr. BERNTHAL. Mrs. Boggs, I think some simple statistics might convey the message. After all the turmoil that we went through—and you are acutely aware of that I suspect—in bringing this plant on line, the availability of the plant has been 84 percent since it started up, a capacity factor of 78 percent, and that compares with the industry average that tends to hover around 60 percent in this country.

I think it is fair to say they have had a good start up and a good operating record thus far.

Mrs. BOGGS. Mr. Chairman, what is the status of the Commission's efforts to hire and promote qualified women and minorities for positions of managerial and technical responsibility?

Mr. PALLADINO. Mrs. Boggs, we have been improving that situation modestly. I think we need to continue attention to both these matters. We have in all levels of management assigned accountability to our managers and supervisors to make sure that we have an effective EEO program, minorities program, program for women. We are using their performance on this matter in their performance appraisal.

With regard to, specific numbers, let me call on Mrs. Patricia Norry who can give you some specifics.

Ms. NORRY. Mrs. Boggs, the best way to characterize our EEO progress in the last few years has been slow but steady, especially within the past year. We have had an overall two percent decrease in staff, including staff at the grade 11 and above, but the women and minority percentages have risen against that overall decrease.

I think that shows that even in times of reduced staffing levels and necessary cutbacks, there has been steady progress in hiring and promoting minorities and women.

Another encouraging thing, as the Chairman mentioned, and with a great amount of Commission direction and involvement, we have increased and re-emphasized the accountability structure for EEO results, so that now every supervisory position in the agency is going to be held directly accountable for results in this area. That is bound to show some progress.

One other statistic which I think is very encouraging, because you can't make progress until you have a good base, at the entry level, where we can hire larger numbers of women and minorities, we had 56 percent of our hires last year at the entry level in that category.

Mrs. **Boggs**. Thank you. That is a very encouraging report.

Mr. **Asselstine**. If I may just make a comment, we are making progress. I would still characterize it as painfully slow. Women and minorities still constitute a very small percentage of our senior level and particularly our managerial positions in the agency. While the steps that Chairman Palladino and Mrs. Norry mentioned are steps in the right direction, such as making managers accountable for EEO performance, I think we need to do more than that. We have begun to formalize our program. We need to make sure that when we advertise positions, that we provide for the broadest possible pool of qualified candidates to fill those jobs, and we need to actively pursue the availability of qualified women and minority employees, particularly for those senior managerial positions.

That is where I think past performance has been the slowest over the past several years and where we really can and should do more. We are on the right track but progress is still very painfully slow.

Mrs. **Boggs** [presiding]. I am sorry. I had hoped that one of the other members could get back from the vote in time to make this a musical chair arrangement. Apparently that has not occurred. We will recess the hearings for five minutes.

[Brief recess.]

Mr. **Bevill** [presiding]. The committee will come to order.

Mr. Chairman, what is the status of the TMI-2 clean-up? Will sufficient funds be available to finish the job, and where are we on that?

Mr. **Palladino**. Well, at the present time, the TMI-2 clean-up is involved with the removing of the debris that's in the core, and this involves the development—it has involved the development of special long-handled tools and canisters in which to put the debris, and I think that that will go, I believe, for another year.

The funding seems to be there to get the job done, unless they run into unexpected situations. I believe that we will see the job done, at least through the removal of fuel and clean-up of the system, and I think the schedule for that is 1988.

Mr. **Bevill**. Now TMI-1 is operating. Is it back in full operation?

Mr. **Palladino**. As of this moment, I believe it is, but let me check with my staff. Things happen while we're sitting here.

Mr. **Bevill.** All right. You may want to just put that in the record, if you want to comment further on it.

[The information follows:]

On March 20, 1986, Three Mile Island Unit 1 was operating at full power. The plant began a scheduled outage on March 21.

Mr. **Bevill.** What is the status of the Commission's proposed revisions to its Government in the Sunshine Act rule?

Mr. **Palladino.** Well, Mr. Chairman, the rule was published. I think we have gotten comments on it. We haven't implemented any gatherings covered by the rule. I have been reluctant to do so, because there were so many constraints placed on us by various committees of the Congress. I don't think that we can be effective in regard to implementing that rule.

I would hope that the Congress would see its way to reexamine the Sunshine Rule. There are studies underway by the American Bar Association and the Administrative Conference, and some of those studies could be useful in guiding reconsideration of some of the provisions in the Sunshine Act.

Mr. **Bernthal.** Mr. Chairman.

Mr. **Bevill.** Yes, Fred.

Mr. **Bernthal.** Mr. Chairman, I would like to make a comment or two, first of all to thank you and the members of this subcommittee in particular for lending what turned out to be rare support to the Commission's actions, which by any reasonable standard did nothing more than to place us in conformance with the interpretation other agencies place on the Sunshine Act.

We ran into a fire storm of protest over our attempts to bring that conformance into our regulations, as you know. I am pleased to report that I think some progress is being made on this now, and your distinguished colleague, Mr. Udall, for example, recently in a hearing before him—I don't want to misquote him or misrepresent him, but I believe it's fair to say that he at least concurred in the view that it's time to take a look at the Sunshine Act and in particular raised no objections, to say the least, to the Commission's action.

So I think we're making progress. We have been so thoroughly battered over this issue, and I think unjustifiably, that I'm afraid right now that there isn't very much more happening. I wish there were. Sometimes you get to the point of saying, "At least we changed our rules." I think that was good for the country and good for the Commission, and maybe it will fall to another Commission some day to implement those rules. But we are making progress.

Mr. **Bevill.** Yes, Mr. Asselstine.

Mr. **Asselstine.** Mr. Chairman, I would just say that I think the status of the rule is, that it is in effect on an interim basis. The Commission put the rule out for public comment. The Commission has not yet decided whether it wants to modify the new rule, but it is in effect and is available for the Commission to use, should a majority of the Commission decide to do so.

Mr. **Bevill.** Yes, Mr. Chairman.

Mr. **Palladino.** With regard to items that cause us trouble in working collegially, I prepared a memo some time ago, I guess back in January, and you might like to have that for the record. It summarizes some of the areas where it would be very valuable if there were some modification to the Sunshine Act.

Mr. **Bevill**. Yes. I think that's good, and we'll just make that a part of the record.

Mr. **Palladino**. All right. I'll submit that.

[The information follows:]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

January 23, 1986

MEMORANDUM FOR: Herzel H. E. Plaine, General Counsel

FROM: Nunzio J. Palladino

SUBJECT: SUNSHINE ACT REGULATIONS

I have attached to this memorandum a list of examples of matters, and I would like you to consider whether or not some, all, or none of the matters could be addressed in a non-Sunshine Act session. In offering these examples, I intend no judgment on whether or not a non-Sunshine Act session ought to be held to consider any of the matters on the list. Rather, the purpose of the examples is to help to clarify the possible scope of the Commission's draft final regulations. Thus, I recognize that some of the items may be clearly outside the realm of a non-Sunshine Act meeting.

You may wish to consider soliciting examples of matters from other Commissioner offices, and assemble an appropriate list that could be made available to the Administrative Law Section of the American Bar Association for its consideration in its work on Sunshine Act issues.

Attachment: As stated

cc: Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech
EDO
OPE
OIA
OI
SECY

List of Examples

1. Draft Testimony
   - items to be included in first draft; philosophy
   - discussion/resolution of points of disagreement or comments
   - consideration of related questions and answers

2. Formulation of guidance where function is assigned to Chairman

3. Budget; draft legislation

4. Discussion of how well the Commission is served by its document control system or other internal operating systems or procedures

5. Five-Year Plan
   - what should be included in it?
   - narrowing alternatives

6. Views on foreign trips involving potentially sensitive information; also sensitive comments of key people learned from undisclosed sources and their impact

7. Brainstorming
   - generating ideas
   - evaluating ideas to identify those worthy of in-depth analysis and subsequent consideration

8. Planning sessions

9. Letter drafting

10. Identifying alternatives worthy of serious consideration at a later date in a Sunshine Act meeting

11. Organizational questions
    - is this or that office performing a useful or necessary function?
    - what alternatives are there to the office or to performance of the function

Mr. **Zech**. Mr. Chairman, if I might.

Mr. **Bevill**. Yes, Admiral.

Mr. **Zech**. Just a brief point. I think we've done the right thing, trying to modify our Sunshine Act regulations, our own interpretation of the Sunshine Act. I think it's much too rigid and much too limiting as to what we can do.

The collegiality on this Commission is really just a myth, in my judgment, and it stymies us from serving the American people. So we have taken a step in the right direction. We have, indeed, I think—our intentions have been misunderstood, and we are waiting for the American Bar Association. They have a task force now of the Administrative Law Section of the American Bar Association that is looking at this very issue, and therefore I think it's appropriate that we wait and see what they say. That may be very helpful to us; I hope it will be. But I think we've taken the right step. I think we are trying to be reasonable about it.

I do think, though, that the American people are not being well-served by the way we are interpreting the Sunshine Act, and we simply must continue our responsible efforts to try to conform to the law, as I understand it, that the Congress wants us to follow and as I'm sure the American people want us to use in order to be better served.

Mr. **Bevill**. All right. Any other comments on it?

[No response.]

Mr. **Bevill**. What is the NRC doing administratively to facilitate standardization of plants in the next generation of reactors? Now you discussed this with Mr. Myers there a few minutes ago, but I don't believe you actually came out with what you can do administratively to facilitate this standardization.

I wish you'd comment further on that.

Mr. **Palladino**. Well, Mr. Chairman, we have been working on a policy statement, and I think it's in a stage where I believe it will be issued before I leave the Commission.

The issues have to do more with different opinions among Commissioners and, I guess, also between the Commission and the Staff. But it would represent a significant modification from the statement that was made, I believe, in 1978, the last time the standardization policy was issued.

Mr. **Bevill**. It appears quite possible that we could be operating with an unnecessarily burdensome regulation for ten-mile emergency planning zones.

Please describe how the millions of research dollars has led us to a resolution of this issue?

Mr. **Palladino**. I'll comment briefly, and others may want to add, and I think we could call on the Staff for additional detail, if you wish.

There has been a very active research program to examine where fission products would go as a result of an accident and how they'd be distributed, and we've also been examining scenarios, so that we can tie the information we get to particular circumstances.

Our study so far has shown that there are some radionuclides whose release would be far less than we predicted in the past. However, the research has also shown that there are some radionuclides under some circumstances that would be as high as they are now predicted and in a few cases even higher.

We believe that we need very sound science before we start to try to change our rules; otherwise we'll get bogged down in litigation, argument, and debate.

That research work and the progress we've made, I was hoping would be—the progress would be greater than I've been able to see while I've been Chairman. As a matter of fact, in my personal remarks you will note that that's one of the areas where I express a little bit of disappointment. But nevertheless, we're making steady progress, and I can't predict at the moment when we'd feel that we're in a position, but maybe our staff might be able to help on that.

Mr. **Bevill.** Yes, Vic.

Mr. **Stello.** Well, I think there's maybe two points to make. Commissioner Bernthal suggested earlier that there is a question regarding, aside from the issue of the new research on source term work, whether the policy could or should have been examined. There was some discussion of doing that back in, as I recall, in 1981, a belief that we could modify what we were doing in the emergency planning area, based on what we understood even at that time.

It was decided not to do that, because we had the research program and expected to reach a conclusion on what the research showed us on source term work, and although it has taken considerably longer than we thought, we are now nearing the end of that particular activity and expect some time this summer, probably around August, to have a report that will lay down the basic, fundamental science to be used for generating new information on source terms, and then following it, we will be able to then go back and take another look at the emergency planning issue.

Now with the history being what it is, clearly that is the best activity to undertake now, to use this new information and take it into account in reexamination and not rely on just the old information. And I hope that we will have that started sometime this summer and start reexamining those rules.

Mr. **Bevill.** Thank you. Any other comments on that?

[No response.]

Mr. **Bevill.** What is the NRC doing to minimize its role as the cause of unnecessary downtime for operating reactors? And I'm basing that on the reports we get more and more that you have moved from construction, since there's none being built anymore, you've started into the operations, the day-to-day operations, and so that's why I'm asking this question.

Are you doing anything to minimize your role in the daily operations of the nuclear plants?

Mr. **Palladino.** I would be pleased to comment on that, Mr. Chairman.

First of all, there are plants still under construction. I think we still have—my last number is——

Mr. **Bevill.** What is the number?

Mr. **Palladino.** About twenty-nine are still in various stages of construction. Some of those may fall by the wayside, but it's not an insignificant number when one looks at this issue.

Mr. **Bevill.** Right, 29 is not an insignificant number.

Mr. **Palladino**. But one of the most important items that I'm afraid may go by the board if we have to cut significantly into our budget, and that is the integrated safety assessment program—no—integrated safety schedule. We are working with some pilot utilities, and I guess it's now only one, where we try to sit down with the utility and see what things need to be done, what priority they should have, what other things that the utility feels need to be done, and try to agree on a five-year schedule of outages whereby they know in advance what they're going to do at each outage. They can plan better for it. They can order the equipment for it and have less uncertainty in the outage.

Now that's a pilot program at the present time. Unfortunately, I don't see that we have the funds to do this on a widespread basis.

Now we are, of course, encouraging utilities to do a better job of planning their outages, and I think some of them are doing an effective job.

I don't know if other Commissioners or Mr. Stello has a comment on that.

Mr. **Asselstine**. Mr. Chairman, I might add a comment, if I could.

Mr. **Bevill**. Yes.

Mr. **Asselstine**. I think that at least in some instances, greater NRC involvement in the day-to-day activities at the plants can actually help reduce some downtimes that otherwise might not be necessary, and I'll give you a couple of examples.

The Davis-Besse plant, as a result of the event that occurred at that plant last June, has been shut down since June, and now it appears it will be shut down for several more months. At least concerning the problems that led to the operating event last June, if we had been more heavily involved and had taken a more active role in insisting upon real improvement at the plant, we might have avoided that operating event and the long shutdown that has occurred since then to basically rebuild the utility's nuclear program.

I think much the same thing can also be said of the TVA program. If we had been more heavily involved in 1981 and 1982 and had followed up on some of the warning signs that existed then, the five TVA operating plants might not be shut down today, and those plants have been shut down for a long period of time and are likely to be shut down for a considerable period of time from now.

I think again that more involvement to identify problems early on and get them fixed before the situation really deteriorates can save the utilities shutting down their plants for substantial periods of time, and can save them and their ratepayers a substantial amount of money.

So it doesn't always cut the other way.

Mr. **Bevill**. Are you stating that as a general rule, you think you all should be more involved in day-to-day operations?

Mr. **Asselstine**. I think those cases justify a greater NRC involvement in terms of being able to understand the quality of operations, looking at the maintenance situation, identifying weaknesses in terms of the way the utilities manage and operate their programs from the standpoint of finding the weaknesses and problems and getting them fixed early on.

Not all of the utilities are weak. There are some very strong performers. In fact, I would mention the plant in your state, Farley. It's an outstanding performer. Maybe not as much day-to-day involvement is necessary there as with the plants that are having difficulties. You have to differentiate between the two.

But if you look back at last year, we ended up with eight plants being shut down at the end of the year, five TVA plants, Davis-Besse, San Onofre, Rancho Seco, because of either the management breakdown at TVA or the serious operating events at the other three plants. In my view, that's too high a percentage of plants to have to be shut down for long periods of time. We're not doing our job as effectively as we should if we can't spot those problems early on and get them corrected before we see a serious operating event leading to lengthy plant shutdowns.

Mr. **Bevill**. Of course, a lot of that goes back to the days when the Nuclear Regulatory Commission was watching them build the plants, and then when they were finished, you would say, "You can't use that pipe."

Mr. **Asselstine**. That's true.

Mr. **Bevill**. You can't use this; you can't use that. After you had stood there and watched them do it.

Mr. **Asselstine**. That's certainly correct, and in many instances we weren't as heavily involved in the construction program as possible, although I think that in the TVA case, some of those warning signs were available to us, and we just didn't follow up on them.

Mr. **Bevill**. So you would agree that in the construction phase is when you really need to do your real observation and take action when you see them doing something wrong.

Mr. **Asselstine**. Absolutely. That's right.

Mr. **Bevill**. Well, that's good. I'm glad to hear that.

Yes, Mr. Chairman.

Mr. **Palladino**. Mr. Chairman, let me speak specifically on the TVA case. I think in the TVA case we had identified the problems over the years, we had taken enforcement action, there had been periodic shutdowns of some of these plants. The problem there has been to get the management to realize that they have these problems and getting them to do things.

Now, I don't say we have been perfect in that, but there is quite a litany of occasions in which we have pointed out the problems, taken enforcement action, and cases where there have been shutdowns.

I think a similar kind of situation we found existed at some of the other problem plants, like Davis-Besse, things they hadn't done, things that Rancho Seco hadn't done, things that San Onofre hadn't done, and when they get these incidents, then they begin to appreciate the value of the information we were providing them along the way.

So I think we need to improve our process and maybe take stronger action to get their attention, but we also need their recognition that they have these problems.

Mr. **Bevill**. Especially during construction.

Mr. **Palladino**. What is that?

Mr. **Bevill**. Especially during the construction period.

Mr. **Palladino**. And also in operation.

Mr. **Bevill**. Yes, I understand, but especially during the construction period.

Mr. **Palladino**. Yes.

Mr. **Asselstine**. That is right.

Mr. **Bevill**. Yes, Fred.

Mr. **Bernthal**. Mr. Chairman, you are exactly right about the minimal effort that this agency has devoted across the country during construction, and the statistics are even worse than the impression, I think. I recall almost every time when we licensed a plant for operation in recent days—and maybe the staff isn't putting the numbers in by now—and it is just a fact that Midland, for example, is a catastrophe in terms of economic loss to the American people and the people of Michigan.

It turns out through that 15-year Midland effort, from the time the first shovel of dirt was turned, on the average we had one-half person from the NRC on site. Now, we shouldn't be there on site to interfere with the construction process or tell them how to do it, but we need to get into a mode of anticipatory helpfulness, I guess, would be the way I would put it, and still maintain our arm's length relationship.

But it is even worse than that. The other point that we touched on a bit earlier was that we were not involved in the design stage or least far less in the design stage. The Federal Aeronautics Administration, for example—I guess the Aviation Administration—is intimately involved when an airframe manufacturer is designing a new airframe, and gives timely, if not instantaneous, feedback on what they consider to be the safety characteristics of that airframe design.

The NRC has never done that. I think we will do it the next time around. But that is the origin, as you suggest, of some of the problems in this business.

Mr. **Zech**. Mr. Chairman, if I may make just a brief comment?

Mr. **Bevill**. Yes.

Mr. **Zech**. First of all, I think this is a very significant subject and one that has to be considered very carefully. We have the expertise in this agency, in my judgment, to regulate and to license. We have a talented group of people in the staff. That is where we can make a contribution. That is our job, that is our mission. On the other hand, the way our system in this country is designed—and other countries are set up differently—but in our country the utilities themselves, the industry constructs the plant, maintains the plant, operates the plant and manages the plant.

Now, it is very true that we should be involved as we go along so there are not surprises at the end. Your point is well taken, and I agree with that. On the other hand, that is a monitoring and inspection technique and capability which we do have expertise in. We can do that. But I think when you get into the management area, it gets to be a little different.

We do not necessarily, in my judgment, on this Commission have all the management talent in the world. That is not necessarily our business. We can, though, do a better job, in my view, in looking at what I call performance indicators: how is the plant operating and are there things within our expertise that we can inspect and analyze and make a judgment on, and can we see a trend of downward performance? There we can perhaps make a contribution and should do a better job.

I think this is a very important area for us to get more involved in, but I do think we have to be very careful about trying to tell the utility how to manage the plant. That is not our business. I think we can help them manage the plant, I think we have a responsibility to call out to them when we think they are not doing the right thing and we should do that, but I do think we should be careful about getting in so far into their business that we are actually telling them what to do in management.

The way we are set up, it is their job. I think they should do it themselves, we should hold them to it and be rather careful about dictating minutia to them that may really not be in our area of expertise. I think they have that. I think we can do a better job of helping them and we should be more involved. The key, in my judgment, in all the plants I have visited, the key is manager involvement. When they are involved on a day-to-day basis, those plants are the ones, in my judgment, that are operating best.

So management is an area that we should be careful about, that we can make a contribution to, but I don't think we should try to take that management responsibility away from the utilities.

Mr. Palladino. I agree with Mr. Zech.

Mr. Bevill. Any other comments?

Mr. Asselstine. Mr. Chairman, I would just add that I agree with that. We shouldn't be involved in making the day-to-day management or operational decisions about how the plant should be run, but we can, both through our normal process of inspection, both for construction sites and for operating plants, identify where utilities or particular plants are going wrong, where they are running into real difficulty and where we are seeing a pattern of poor performance.

Often, the root cause of that poor performance is a management weakness by the company itself, and I think that is where we have to be stronger in saying, if we see that kind of situation, you have to stop and sort out your problems and come to us with a convincing explanation for how you are going to bring about real improvement in order to satisfy us that you can continue the construction program or continue operation of the plant.

I think we will be better off if we can do that early on rather than waiting for something fairly catastrophic to happen that really takes years or months to rebuild a whole program, and I think we are seeing that now with TVA. It is just plain wrong for us to allow a construction program to go forward where we know there is a seriously deficient construction program and a lack of quality assurance, only to stand up at the end of the line and say: sorry, fellas, you didn't do it right and now you have got to go back and sort it all out and try and figure out how to make this thing correct. That is a failure of our program, and I think we need to learn from that experience.

Mr. Bevill. Yes. I think you are making progress on that.

The Chair recognizes Mr. Rudd.

Mr. Rudd. Thank you, Mr. Chairman.

Let me talk for just a moment, about the Palo Verde Nuclear Plant in Arizona. I am wondering if you are going to be able to provide the support and encouragement to them that they need. I'm talking about keeping things on schedule for number 2 and 3 nuclear plants. After we get through with all the problems we have had on Number 1, should there be similar problems with 2 and 3, which should be just exact duplicates of Number 1?

We have had a lot of problems and I am wondering if you have thought about, once we solve the problems on Number 1, whether we are going to be able to keep on schedule with the other two. By that I mean not letting them go forward, along the lines you were just talking about, or providing negative advice instead of positive advice. It seems to me you have got to do more than just say, "that's wrong, fix it." And then they think its fixed, you come out and say: "That isn't what I had in mind, I want you to fix it again."

It is my perception that this has been part of the problem. I am wondering if you are planning well enough ahead so that we don't have those kinds of problems with plants number 2 and 3.

Mr. Palladino. Mr. Rudd, I think we are. Some of the problems that were encountered on Unit 1 were unfortunate, especially in view of the fact that they had made such a fine showing in getting that plant built in a relatively short period of time. I am going to ask Mr. Stello or Mr. Denton if they could add as to what support we are providing, what steps we are taking with regard to the other two units.

Mr. Denton. I think it is our intent, Mr. Congressman, that Units 1, 2 and 3 will all look alike. There have been problems on Unit 1, but I think as far as we are concerned, they have all been fixed. They have been identified. Unit 1 has been running now for about nine months. They did experience a number of difficulties. Those changes that they made in Unit 1 they also made in Unit 2. So I anticipate we will license Unit 2 when the plant is through with the low power testing, and license Unit 3 when the plant is completed.

It will be the first of a kind. You would expect problems to crop up in Unit 1, and we are trying to make sure that we put the effort in on Unit 1 so that we don't repeat in the same problems in Units 2 and 3. I think the biggest problem they face, frankly, is their management stress in bringing all three units into operation. Since they were a green utility to begin with, they have had to learn how to operate Unit 1, and now they are operating Unit 2 at low power.

Mr. Rudd. It sounds like you are planning for it, and I am glad to hear that.

Mr. Bernthal. Mr. Rudd, I had the opportunity two weeks ago to visit the site out there once more. Unit 2, as Mr. Denton has said, is in the low power phase, now, of operation. I am always reluctant to be enthusiastic and complimentary because it usually comes back and bites me about six months later, but I don't think many people in the country appreciate that that is probably the largest civilian construction project going on in this country today.

It is an extraordinary achievement. It is the only site, in my judgment, that looks like the future of nuclear power in this country. The utility has done, by and large, a good job. There are three units side by side that closely resemble what we would expect, I suspect, a standardized Combustion Engineering PWR to look like at some point down the line. It reminds one in some respects of the achievement of the French at Paluel. It is not quite as up to date in every respect, but that is a very impressive achievement out there.

I fully hope and expect that the operations will prove my expectations, at least, and, I think, those of the rest of us to be correct. It is a good plant, in my judgment, an impressive achievement, and I believe they are well on the way to bringing their second and third plants on line in a timely fashion.

Mr. **Rudd**. I appreciate what you are saying, and it has been my understanding that that is true all along. Unfortunately, members of the press—and people who oppose the plant get the press and the media attention—have no conception of what you are talking about. It is unfortunate that they don't; we tend to just take your words verbatim and give them to some of the members of the press.

Mr. **Bernthal**. You do that at your peril, I should say, because usually I——

Mr. **Rudd**. Let them look at them for a change and compare them with some of the misinformation that they get.

Mr. **Asselstine**. Mr. Rudd, the approach that you talked about and that I think Mr. Denton described ought to be one of the advantages of standardization. This is a standardized site, and if we can identify whatever problems there are with this first of a generation or first of a type plant with Unit 1, fold those lessons into Unit 3 and then be able to move into the operation of Units 2 and 3 fairly effectively, then that demonstrates one of the benefits of standardization.

We saw some of the financial benefits of standardization in the construction programs for Units 2 and 3, but the operational benefits should be there as well. I did see a notice within the past couple of days about a question or concern on the main steam line supports for the Palo Verde plants. I don't know what the status of that concern is, but we can probably provide you something for the record on that.

[The information follows:]

On March 13, 1986, a failed pipe hanger was discovered on a line in the main steam system in Palo Verde Unit 2. On March 17, 1986, after performing analyses, the licensee reported that five other pipe hangers in the main steam, safety injection, and main feed systems could fail. The licensee decided to add gussets to the beams that support the hangers to strengthen the hangers. This work has been completed on Unit 2 and is in progress on Unit 1.

Mr. **Rudd**. I appreciate that.

Mr. Chairman, Chairman Palladino, how many employees does NRC have?

Mr. **Palladino**. Nominally our ceiling for this year is 3,491, but I think we are running about 50 or 60 below that at the present time, anticipating that we are going to have to reduce in the next fiscal year.

Mr. **Rudd**. How many reactor inspectors do you have?

Mr. **Palladino**. I will defer to Mr. Taylor because you can count them a lot of different ways.

Mr. **Rudd**. Okay.

Mr. **Taylor**. Sir, we have, in all the plants, about 160 residents, and I will give you for the record the number of region based, if that is all right. But there are 160 residents.

Mr. **Rudd**. How many regional?

Mr. **Taylor**. I will give you that number in a few minutes. I just have to look it up. I will submit that for the record.

[The information follows:]

As of January 31, 1986, the number of on-board region based inspectors in NRC totaled 355. The total number budgeted for FY 1987 is 374.

Mr. **Rudd**. I think you said you had 99 reactors that were under inspection?

Mr. **Taylor**. Yes.

Mr. **Rudd**. And I guess if you have that many on-site inspectors, you have at least one and three-quarters for every reactor.

Mr. **Palladino**. Mr. Rudd, we are adding so that every reactor site, including those under construction, which I think are about 15 percent, we are putting resident inspectors on them, and in most cases, at least in the operating cases, trying to get two inspectors at every plant. But those are residents. They are not the only inspectors. Those are the people that live at the plant day in and day out and keep their eyes open as to what is going on. But in addition we have many other inspectors in the region, and that is the number I don't remember.

Mr. **Rudd**. How many?

Mr. **Taylor**. We have, in addition to the 160, we have about another 130 dedicated reactor inspectors in the technical areas supporting from the regions, and then there are other inspectors who are dedicated in areas like radiological controls, materials licensing and so forth.

Mr. **Rudd**. Does one inspector just sort of live with one reactor day in and day out?

Mr. **Taylor**. Yes, they do.

Mr. **Rudd**. But he has some kind of a backup when he is sick or on vacation?

Mr. **Taylor**. We have tried to at multiple unit sites like Palo Verde, and I guess there are two units now coming into operation, we have two operating residents. There happens to be a construction resident still there because of Unit 3.

Mr. **Rudd**. Then on top of that, you have some regional, I guess you call them, inspectors, but they are moving inspectors who can come in and check the work that the resident inspector does and make sure he is on the right track.

Mr. **Taylor**. Yes. Usually the region people represent expertise in specific technical areas like instrumentation, whereas our residents are more generalists. They are trained particularly heavily in operations, and when the plant has instrumentation problems, they get support out of the region.

Mr. **Rudd**. What I am really trying to get at is standardization. I think that is the word that has been used. I would use "uniformity," probably.

Mr. **Taylor**. That would help in training our residents.

Mr. **Rudd**. I don't know what is causing all the problems that we have. You have someone, as you point out, build a plant, get half-way through it and find out they have done it all wrong. How can that happen when inspectors are on the scene watching? Don't they communicate with the other inspectors and don't they have some kind of decisionmaking process and leadership, that is provided from the Commission?

There must be some reason why we have run into all these problems.

Mr. **Palladino**. Mr. Rudd, we tend to identify problems, we tend to emphasize them. There are a lot of areas where there have been no problems. However, I want to get back to your point.

During construction, most of our work is audit. We work with the utility to get the utility to set out its plan, set out a good quality assurance plan. It has many, many more inspectors than we could possibly provide at the site. Then we audit whether they are operating their plan the way they said they were going to do it. Many of the problems come up not so much because we have imposed a new surprise on them, but they are not doing their job in making sure that the plant is being built the way they said it was going to be built.

Not everybody is like that. We have had many good successes and Palo Verde was one of them.

Mr. **Asselstine**. Mr. Rudd, if I could add a comment. You asked why this happened in some of these cases. I think there are several reasons for it. First, as Commissioner Bernthal pointed out earlier, historically, we didn't put as much emphasis on construction as we should have, we didn't have as much inspection coverage. That is one reason.

Second, I think there was an attitude for a period of time that construction wasn't as important and that the pre-operational testing program would identify any problem and it just didn't get as much emphasis as operations did.

I think a third reason is sort of missing the forest for the trees kind of problem. People would focus on individual difficulties. They would find violations or problems but they would focus on that specific one and they would be satisfied if that specific problem got corrected without stepping back and saying, is there a question about how this program is working, is there a quality assurance breakdown at this site. I think we missed some of those.

I think the last reason is that in some instances, we got fooled, even where we identified a program problem, the utility would say, well, we have a corrective program for that, and here is our new program and our response was, all right, fine, let's wait a while and see if that works. In some instances, we found out, even after repeated efforts, that those corrective programs didn't work. They didn't address the fundamental problem and bring about the necessary corrective action.

I think all of those are reasons why in the past we had some of these breakdowns in the construction programs. I think they are a failure not only on the part of the utility programs but also on the part of our own as well.

As Chairman Palladino mentioned, we have had some successes as well.

Mr. **Rudd**. Hindsighters and second guessers are always in a much better position than anybody else to tell you what went wrong.

I think what we are talking about today is something we should have solved years ago for our nuclear industry. I really deplore that. In the nuclear industry, we have had a history of confusion, a lack of coordination, and communication among the people in your position and people in the industry and the private sector—the people responsible for the development, construction, completion, operation and licensing of nuclear plants.

We are striving for 20 percent of our energy from nuclear power, which I think we had better have before the turn of the century or we won't make it.

What it means to me is two things; there must be some uniformity in the construction of nuclear plants in the private sector. I have listened to your testimony this morning. I really felt at the outset that we had things solved, that everything was on track, that there no longer was confusion that we had experienced. I am really surprised, shocked and really sad to see that it isn't that way. I don't know the answers or presume to know the answers. I do feel strongly there should be some kind of uniformity. I would rather not have it in your hands, but we need uniformity among the people in the private sector who are doing the construction and some kind of an indication from you that there should be communication with all of these people.

You mentioned that Palo Verde was in good shape and it looks like that is the way we should have gone in the past. It is not too late. If we had good communication in the private sector with the constructors, the builders and the technicians and the scientists involved, if they could get together and decide on uniformity, it would benefit not only them, it would benefit you; but above all, it would benefit all of the people in our country. I don't know why they can't be inspired to do that.

We don't need to set up another level of government to say that we are going to do this way. You could probably do it but I prefer that you did not do it. I would like to see them do it for themselves. I know it would be more efficient in the long run because they have more to lose than anybody else. I would hope you could inspire them on that.

The other thing that really bothers me is that from the line of questioning my colleague had here this morning, it appears that our whole concept and direction is in shambles. We still come back and the Commission says we are at fault on this, we are at fault on that. Is that a lack of leadership? The Commission itself was conceived and put into effect for a major purpose, at least in my mind, to provide leadership for this industry and to see that it went on the right track. Not to stop it or to be negative. I thought that part of it had been solved.

I don't know what the answer to this is except I think once a decision has been made we ought to go forward with it. Everybody ought to understand so they can go forward with it. There should be complete confidence that is the way it is going to be.

I am not talking about you, Mr. Chairman, but the Commission as a whole, is expected to provide the leadership. I don't think you have been doing it. Those are hard words but I don't see it any other way.

Mr. **Palladino**. I certainly take counsel from your words. I think we have emphasized problem areas. Remember, we said there are 99 plants licensed to operate and we have talked about eight or so. There have been successes as well as problem areas.

We have made improvements in this country, not necessarily by NRC but by the industry, through the formation of the Institute for Nuclear Power Operations and another committee we call NUMARC. They brought a lot of new insight from an industry standpoint to the industry itself, by setting programs for striving for excellence. We set minimum standards and people strive to meet them. INPO is trying to get them to do better than the minimum standards. I think that is what it takes in many cases to realize going forward.

This group, the INPO people, have also played a very important role in upgrading the training of people, not only the operators but at all levels. NUMARC has also been very instrumental in interacting with us on such questions as fitness for duty and other human management kind of problems.

We are not doing badly on all things. I don't want to mislead you that we are doing all that great on everything.

With regard to standardization, one of the problems is it has to get started when you are building a lot of plants. All the plants that are under construction have already been designed in the old way. I think the next order, assuming there will be one in the near future, and I believe firmly there will be, I think it will come about in this way, that the utility is faced with the need for growth. The utility will evaluate coal, oil, hydro and this particular area, nuclear, and will find nuclear attractive, providing it can get built on a very clear timetable and with a given cost.

They are going to look at these various plants and say, there is a plant that has given a good capacity factor, it came in within cost, I want to get one just like that. That is the way we are going to start standardization, I believe.

Mr. **Rudd**. It seems to me that should have been done years ago. There must be some sort of introspection involved in what you are doing. It seems to me you don't trust these people and the indication earlier was, every time they turn around, you say you can't do it that way. Then they say, what is the use, we will just let them tell us everything we think we should do, where we put that bolt, how fast we twist this screw. If you get into details like that, that is not going to work either. If you display mistrust for everybody that you are going to be associated with, it is not going to work. I don't know if this is true but it looks like that is what is happening.

You have to trust these people. If they go too far and I am not talking about dangers or peril or anything like that, hit them hard and they won't do it again.

Mr. **Palladino**. Our whole approach is based on trust. The number of people we have in the whole agency doesn't even begin to approximate the number of people that are on the site of a single plant. We have to trust these people and we do trust them. Our philosophy has been we will work with them at the beginning to get their program outlined, get it approved, get their quality assurance program outlined and get it approved. They have to implement it and they have to follow it.

Mr. **Rudd**. Mr. Asselstine.

Mr. **Asselstine**. Mr. Rudd, I think part of the difficulty in the past has been communication difficulties. I think in the past, neither we nor our predecessors at this agency or in the Atomic Energy Commission before and within the industry, had really all made clear what kinds of common objectives we all were seeking. I think if there is going to be a future for nuclear energy, we need to set those kinds of objectives and it ought to be done cooperatively.

We ought to be talking with the industry and we ought to be saying what it is that we are looking for and they ought to be telling us what it is they are looking for in the future.

If I had to pick a few things, I would say first, standardized designs. We ought to tell the industry what we think we need in terms of the standardized design, to be able to settle all of the design questions before you stick the first shovel in the ground to start building a plant. All of those issues ought to be settled. That is a mistake we made in the past. We ought to learn from that. We ought to be telling the industry, if you want us to sign off on this design and not tinker with it, then here is what we need in order to be able to give you that kind of stability and predictability.

Second, we ought to tell them specifically what objectives we are looking for in terms of the performance of the plant. Once again, the margin of safety, the level of protection we are looking for, so they will have assurance that we won't tinker with the plants. We won't incorporate a lot of backfits, new requirements or changes as time goes on, unless there is a very, very good reason for doing so.

Third, we ought to say what we are looking for in terms of the management of a construction program for any future plant so we have a high degree of assurance that when they start construction, they have a qualified and capable team that we are going to have confidence in throughout the construction program so we won't have these problems at the tail end of the process that we have had in some cases. That is for future plants.

I think we need to do the same thing for the 120 plants or so that we will have in operation in the next few years. We need to say what objectives we are looking for. I think you can pick a few that are pretty common sense objectives.

One, no more accidents. Two, cut down on the number of serious operating events that we are seeing at the plants. Three, let's achieve the levels of reliability and performance that other advanced countries are achieving. If we could set those kind of objectives, make it clear to the industry what we think needs to be done to do those things and get their commitment to help achieve them, we would be in much better shape.

Mr. **Rudd**. I appreciate your statement. I think maybe part of the problem in the past has been there have been doubts among a number of people about whether we should even be involved in this industry or not. I think at times there have even been doubts on this Commission whether we should be involved.

My goal as a citizen is to see that we get the benefit from nuclear energy which is valuable, clean, and except for hydroelectric power, is the best source of energy we have ever yet devised. I hope that we can get the full benefit of that for our people and for our industries and for the future of our Nation. That is the only goal that I see in it as a citizen. I want to see that come to fruition.

I do thank you very much. Thank you, Mr. Chairman.

Mr. **Bevill**. The Chair now recognizes Mr. Fazio.

Mr. **Fazio**. I have a number of questions that will probably duplicate some that were asked earlier, and in those instances where they don't, they probably don't warrant disclosure at 12:10, so I will include them in the record.

But I do have to ask some questions about one particular issue, which I regret to say is rather parochial. I hope there will be people who can help me. I really do enjoy our discussions with this quintet, but time doesn't necessarily provide us the opportunity to do that today.

The issue of Rancho Seco Nuclear Power Plant is very hot in my district right now. We are losing $7 million a month because of the existing shutdown. The private utility, PG&E, is about to sue in court to reduce the claims that SMUD has on them. It's becoming a very significant, painful, drain on the resources of the utility.

I wonder if someone could help me by indicating when they think the issues with regard to this plant could be resolved. I have some other questions to follow up.

Mr. **Palladino**. I wonder if we might ask Harold?

Mr. **Denton**. Mr. Taylor and I are going out to that plant Monday and Tuesday to personally try to develop an answer to that question. That plant has been a troublesome plant to the Commission for a number of years. One way to look at it is that it has somewhat suffered from benign neglect, I think, over a decade of operation.

You know, it's owned by a small public corporation. Staffing has been small. Maintenance has not brought that plant up to the standards of some others.

I would hope that after we have a chance to review the utility's program plan, we'll be able to give you a date, and I'll be happy to provide that for the record. But I think at this time, we're not able to provide that information.

Mr. **Fazio**. I have just a couple of questions, and then perhaps I could ask you if you would give me a personal update when you return. I would appreciate it.

Mr. **Denton**. I'd be glad to.

Mr. **Fazio**. To what extent do you think the difficulties at Rancho Seco are generic, and related to the Babcock & Wilcox design. Are the difficulties part of the questions that are really confronting you with a whole series of plants that were produced under that rubric? Do you think there is any aspect of that that we have to look at here?

Mr. **Denton**. They certainly are. The design doesn't have the forgiveness that the Westinghouse and CE designs have. And it's much more sensitive to breakdowns in maintenance and operations, and I think to that extent, the design does contribute to the difficulties.

Now we still think that these B&W designs can be operated safely, provided you have the proper infrastructure there to operate. So it's certainly related, but I don't think it's the dominant contributor necessarily. It's probably more the quality of the operations and maintenance.

Mr. **Fazio**. Do you think there is any help that you can provide them, a kind of generic approach to preventive maintenance that has worked at other facilities? Is there anything you can provide, in a package sense, that would be adoptable by the management?

Mr. **Denton**. A sterling example is what is being done at Davis-Besse, and we have recommended that the Rancho Seco management review what is going on at Davis-Besse.

Duke Power is operating similar plants very well. And I think there are lessons to be learned from these utilities that have had successful operation.

One other point, as I understand it, the Department of Energy is considering supporting a study of B&W plants to see if, in fact, there are improvements that should be required in these plants and take sort of a generic look at them. But as a class, they have given the agency more trouble than their percentage would indicate.

Mr. **Fazio**. Has the Department of Energy submitted something in terms of a budget request that would go to that issue?

Mr. **Denton**. Let me ask Mr. Stello.

Mr. **Stello**. In recognition of the B&W problem, there was another attempt by the Commission to go to the industry and ask the industry, "Don't you want to take the lead and you solve these problems, rather than us dictating prescriptive solutions? Take a comprehensive look."

We made them aware that the Department of Energy was available and willing to contribute whatever studies they could do or had done and analysis capability. EPRI is willing to work with them. We have told them that we had hoped that as a goal, the NRC needs to evolve a plan to monitor their plan. We want the industry to do this, for the industry to get whatever it needs, including if there's something we in the NRC, through our research activities, can do for them, we'd like to do it, but we want them to be in the lead to solve this problem in the context of DOE working hopefully with the Owners' Group, rather than a separate program. We would discourage them from doing something separate from the Owners' Group.

We do truly want to let them take the lead to solve this problem.

Mr. **Fazio**. Well, I know this committee would be interested, at least, in considering a request from the Department of Energy to help these utilities with these plants that have a record of operating problems. I would hope that the committee would be clearly informed about what it is that we might do to help bring that about.

There has been a change in the management of the utility. Even though it's a relatively small one, it's large for public utilities, municipally-owned. I think they're in the process—I know they've made some presentations to you recently—in the process of trying to upgrade their staffing, their capability to handle what has become for them a huge political problem. They have an elected board, as you know.

And I, while certainly wanting to be mindful of the local public safety concerns, obviously share management's concerns about the ongoing cost to the ratepayers. So I'm particularly anxious to have a follow-up meeting with Mr. Denton and Mr. Taylor upon their return and ongoing, if possible. I know the committee would be interested in some long-range approaches that might be helpful in general to all these plants.

I will put questions related to generic licensing review, liability law, personnel, seabed disposal, et cetera in the record.

Thank you, Mr. Chairman.

Mr. **Bevill**. All right. Are there any other questions?

Mr. **Myers**. I have some questions for the record, Mr. Chairman.

Mr. **Bevill**. Several members have. Mr. Fazio, I know, says he has, and I have several here that we're going to submit for the record.

I do want to compliment you, Mr. Stello and Mr. Denton and all the staff and the members of the Commission, for what you've accomplished.

And, Chairman Palladino, you should be entitled to the Congressional Medal of Honor. [Laughter.]

You took on a very difficult task. You've served the longest of any chairman that's served, and probably longer than any other chairman will serve. [Laughter.]

It's a difficult task, and the members of this committee are aware of that. We get frustrated sometimes with these things, like you do. Particularly when you come before this committee, and we fuss at you because you're trying to do too much in too many areas, and then you go before other committees and they fuss at you because you're not providing enough regulations and details.

So you all, actually, have to walk a tightrope all the time. We appreciate that, and we appreciate what you've done. We certainly wish you the very best. This will be, I understand, your last time to testify, since you are retiring. I'm sure that I speak for the committee that we all appreciate you and appreciate what you've accomplished.

Backfitting was something you set out to do something about. That in particular, I think, stands out, and it has been, with the help of the other Commissioners and the staff, it has been accomplished.

So we just wish you the very best, and we appreciate the good work you've done.

Mr. **Palladino**. Thank you.

Mr. **Bevill**. And, Admiral Zech, we are looking forward to working with you as chairman, and we congratulate you for your promotion.

Mr. **Zech**. Thank you, sir.

Mr. **Myers**. Is that a promotion.

Mr. **Bevill**. Yes, that's a promotion technically speaking. [Laughter.]

He might argue with you after he's been in there for awhile.

Mr. **Palladino**. Well, Mr. Chairman, thank you very much. I really appreciated the opportunity to interact with this committee. I have found that the guidance that we got from it was very, very good, and we've tried to follow it, not always doing it perfectly, but I think this Commission has been very conscientious in paying attention to the matters that you bring up.

With regard to a medal, the only medal I think a chairman should get is a Purple Heart. [Laughter.]

Mr. **Bevill**. That would be very appropriate.

Mr. **Myers**. You've got the scars to prove it.

Mr. **Bevill**. This committee will stand adjourned until 10:00 a.m., Wednesday, April the 9th.

[Questions and answers for the record follow:]

MR. BEVILL: Do you foresee the NRC imposing increasingly more strict maintenance requirements on the nuclear industry?

CHAIRMAN PALLADINO: The NRC has developed and is implementing a Maintenance and Surveillance Program Plan. The plan provides direction for NRC efforts to assess nuclear power plant maintenance and surveillance practices. Phase I of the plan (scheduled to be completed in April 1986) will provide a description of current industry maintenance practices and problems and will evaluate the responsiveness of recent industry initiatives to improve maintenance.

Phase II activities are expected to commence following Commission review of the Phase I report. Phase II is intended to evaluate the effectiveness of industry initiatives and to independently determine the impact of Maintenance problems on plant safety and worker radiation exposure. Recommendation for further NRC action, including new maintenance requirements may result from the Phase II activities. A determining factor for whether or not new requirements are issued is the effectiveness of recent industry initiatives to improve maintenance. The NRC is monitoring industry progress in this area.

MR. BEVILL: How can the NRC assist the nuclear industry in improving the reliability and availability of nuclear power plants?

CHAIRMAN PALLADINO: The primary mission of the NRC is to protect the health and safety of the public with respect to the operation of commercial nuclear power plants. As such, the NRC can only assist the nuclear industry in improving the reliability and availability of nuclear power plants as it relates to this goal.

Through experience, we have found there appears to be a strong relationship between reliable operation, high availability, and safety. Many factors that contribute to high reliability and availability are affected by the regulatory process. It is in these areas that the NRC can assist the nuclear industry. Currently underway are a number of initiatives that should allow the industry to improve reliability and availability.

For example, in piping design, GDC 4 as applied in the past for loss-of-coolant accidents has required the installation of protective devices and the design for extremely large dynamic loads has required the use of system snubbing devices. However, the protective devices also impeded inservice inspection and maintenance, reduced safety if improperly installed, and increased worker radiation exposure and the snubbing devices themselves have required maintenance or have led to plant shutdowns.

Advanced fracture mechanics methodology recently developed is now available to demonstrate that piping which meets the associated acceptance criteria is extremely unlikely to rupture, and therefore the protective devices and snubbing devices originally required to mitigate against the effects of such postulated breaks may be eliminated on certain piping. To that end the NRC has permitted such elimination on a case by case basis granting schedular exemptions to a number of plants and is currently taking parallel rulemaking action to amend GDC 4 to eliminate the need for such exemptions. The rulemaking is proceeding in a two step approach. The first step, limited to the primary loops of PWRs, has just been completed and the second step of the rulemaking covering all high energy lines has just commenced.

Another example, the staff's ongoing maintenance and surveillance program, is providing focus for NRC activities related to maintenance of plants. Its scope is not limited to safety related systems, rather it addresses maintenance practices broadly as they effect overall plant operation, reliability and availability. The scope is broad because safety is enhanced by a plant which is well maintained and operated.

The staff's approach to maintenance improvement is to encourage industry self-initiative and to refrain from new regulations where self-regulation is effective. As a result, we have developed a phased plan which concentrates on defining current maintenance practices and problems and evaluating of the effectiveness of recent industry programs developed in response to the staff's plan. As a part of this plan, the staff and industry have developed maintenance performance indicators to objectively evaluate the effectiveness of these programs.

The Commission has an ongoing program to establish, in conjunction with the licensees, integrated implementation schedules for new and existing requirements. The integrated schedule would reflect relative priorities for each licensee, the importance of the requirement to safety or safeguards, and the licensees ability to complete the necessary engineering, evaluation and design. Our experience to date indicates that this scheduling concept benefits both the NRC and the licensee in the utilization of their respective resources and provides flexibility in scheduling the implementation of requirements to minimize unnecessary downtime (i.e., improved availability).

Mr. Bevill: How does the availability of U.S. nuclear reactors compare with that of Japan and Europe?

Chairman Palladino: Data on availability of U.S. Reactors is maintained by the NRC as part of the background information associated with each facility. However, data concerning the availability of foreign reactors is not routinely collected because it is available in publicly available sources.

For example, a detailed discussion of such data is provided in an article (pp. 76-80) in the August 1985 supplement to Nuclear Engineering International.

Data from this article is summarized in three tables which I will submit for the record. This data includes reactors of 150 MWe or greater that were in operation for at least 12 months on December 31, 1984. The data is based on calendar year 1984. Countries are included in the tables if they had four or more operating reactors during the period (of the European countries, this criterion eliminated Italy and the Netherlands).

(The information to be provided follows:)

PERFORMANCE BY COUNTRY FOR THE YEAR ENDING DECEMBER 31, 1984

COUNTRY	ARITHMETIC AVERAGE ANNUAL LOAD FACTOR, %	NO. OF REACTORS
SWITZERLAND	89.20	4
FINLAND	88.77	4
BELGIUM	87.12	5
GERMANY	81.53	12
TAIWAN	77.37	4
SWEDEN	75.51	10
JAPAN	71.35	28
FRANCE	71.26	34
CANADA	70.64	12
SPAIN	69.04	6
USA	55.55	79
GREAT BRITAIN	51.76	28
INDIA	39.10	5

SIMILAR DATA THAT INCLUDES ONLY BWRS AND PWRS IS PROVIDED IN THE FOLLOWING TABLES.

COUNTRY	ARITHMETIC AVERAGE ANNUAL LOAD FACTOR (%) PWRS
BELGIUM	87.1
GERMANY	82.9
FRANCE	74.7
JAPAN	71.5
SPAIN	68.2
USA	60.3

COUNTRY	ARITHMETIC AVERAGE ANNUAL LOAD FACTOR (%) BWRS
SWEDEN	79.7
GERMANY	79.6
TAIWAN	77.4
JAPAN	72.6
USA	47.5

MR. BEVILL: What role does the NRC play and how does this compare with the role of the NRC counterparts in Japan and Europe.

CHAIRMAN PALLADINO The role of the NRC is in some respects similar to those of other governments. In other respects it is different. For countries in which one government agency is both promoter and regulator, there is a vested interest on the part of the regulatory agency to ensure reliable operation not only from a safety standpoint but from an economic standpoint as well. The primary mission of the NRC is to the public health and safety with respect to plant operation. The NRC can only assist the nuclear industry in improving plant reliability and availability as it relates to this goal. For example, NRC's prompt evaluation of operating events and licensee event reports, and their significance, coupled with the rapid dissemination via information notices of this evaluation to utility licensees, alerts them to these events as possible precursors to transients in their plants so that they can take appropriate action and thus avoid outages.

In Japan, primary responsibility for commercial nuclear power regulation is given to the Ministry of International Trade and Industry (MITI). MITI receives significant input from the Office of the Prime Minister. The role of MITI, as opposed to the NRC, is to both regulate the safety of the nuclear industry and to promote the use of nuclear energy. The Machinery and Information Industries Bureau of MITI is responsible for technical development of nuclear power generating machinery and for the encouragement of nuclear machinery industries. The Public Utilities Department of Natural Resources and Energy Agency is responsible for siting, licensing, inspection, enforcement as well as the development of nuclear power generation.

The Office of the Prime Minister contains the Atomic Energy Commission whose prime responsibility is the advancement of nuclear power, and the Nuclear Safety Commission which is responsible for policy relating to nuclear safety.

In Japan, the heavy involvement of MITI in the development and promotion of nuclear power places more emphasis on the role of the plant in meeting national energy needs than in the United States. This results in a concern with plant reliability and efficiency which is not addressed in the NRC Regulations.

From a design viewpoint, newer European designs based partly on government requirements, have included substantial redundancy in certain critical components and systems such that many outages that previously resulted from components and systems being inoperable no longer occur.

For example, new plant designs in Germany, Switzerland, Belgium and the Netherlands adopted an n + 2 criterion for plant safeguards systems, meaning if n is the number of trains required to perform a safety function, n + 2 is the number of trains designed into the plant. This design criterion leads to higher plant availability because it avoids plant shutdowns due to safety train maintenance and repair work.

The Atomic Industrial Forum has published a report, "Observation of the Nuclear Power Program of France and the United States", which provides additional insights into the U.S. and French nuclear programs. We will provide a copy of the report to the Committee.

MR. BEVILL: What is the NRC doing to minimize its role as a cause of unnecessary down-time for operating reactors.

CHAIRMAN PALLADINO: Presently, the NRC has a number of programs and established policies in-place directed at limiting unnecessary down-time at operating reactors due to regulatory requirements. In addition, the NRC has under development initiatives that will further limit unnecessary down-time.

As you know, plant Technical Specifications require plant shutdowns and prevent startups when certain safety systems are inoperable. To avoid unnecessary operational restrictions, we have in effect policy and procedures for granting exemptions which provide a temporary waiver from Technical Specification requirements when the circumstances warrant. In addition, in situations where operation would be restricted, the headquarters staff in conjunction with the Regions evaluates, on a priority basis, requests for waivers of compliance to determine if operation poses an unacceptable risk. Further, the NRR staff is now in the process of developing criteria and methodologies for generic and plant-specific technical specifications that will more precisely focus the requirements on the most important safety-related systems and eliminate or reduce requirements on less significant systems.

The NRC has established policy and instituted a number of programs to ensure that new requirements provide a substantial improvement to safety and do not unnecessarily impact operations. Generic and plant-specific backfits are thoroughly evaluated by the NRC staff to determine cost/benefit in terms of risk reduction. When new requirements are justified, the NRC has worked cooperatively with licensees in establishing implementation dates for NRC required plant modifications. Via letter to all operating reactor licensees dated May 2, 1985, we offered to establish new schedules for all NRC-initiated plant modifications whether mandated by the NRC or volunteered by the licensee.

In addition, when plants are shutdown for safety reasons, NRC expedites its review of corrective actions to ensure that decisions regarding plant operations can be made expeditiously.

Collectively these efforts serve to ensure that the NRC required down-time for operating reactors will not pose an unjustified burden on industry. NRC will, of course, continue to restrict plant operation as necessary to provide reasonable assurance of public health and safety.

MR. BEVILL: Please describe the successes of the NRC during the last year and what do you see as the principal objectives of the NRC for the future?

CHAIRMAN PALLADINO: The NRC's FY 1985 End-of-Year Report summarizes the agency's major program accomplishments during FY 1985. With your permission, I will provide a copy of this report for the record. A summary of NRC's major accomplishments from October 1985 to February 1986 is also provided for the record.

The principal objectives of the NRC for the future are described in the Commission's 1986 Policy and Planning Guidance, NUREG-0885, Issue 5, a copy of which has been provided to the Subcommittee. The purposes of this document are: to set forth the regulatory philosophy of the NRC and its supporting principals; to state the strategic goals and major policies of the Commission; and to provide guidance for the development of plans and programs, for the establishment of priorities, and for the allocation of resources. Longer range objectives will be forthcoming as the Commission completes its first five year planning process.

(The information follows:)

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

Page

REACTOR SAFETY

Oversee Operating Reactor Performance 6
Analyze Reactor Operational Experience 9
License Current and Future Reactor Designs 11
Predict Safety Impact of Abnormal Operating Conditions 13
Resolve Reactor Safety Concerns 16

MATERIALS SAFETY, WASTE MANAGEMENT AND SAFEGUARDS

License and Monitor Materials Licensees/Fuel Cycle Facilities 20
Regulate High Level Waste 23
Regulate Low Level Waste 26
Perform Safeguards Regulatory Activities 27

INVESTIGATIONS AND ENFORCEMENT

Review Allegations and Conduct Investigations 28
Take Enforcement Actions 29

PROGRAM DIRECTION AND SUPPORT

Manage and Support Technical Programs 30

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

OVERSEE OPERATING REACTOR PERFORMANCE

- Currently 95 power reactors licensed to operate - 93 full power licenses, 2 low power licenses.
- Conducted approximately 3250 inspections for reactors in operation, compared to approximately 2720 in FY 1984. Inspections per unit remains at about the same level as in FY 1984.
- Issued 45 SALP reports for operating reactors.
- 145 operations resident inspectors on site.
- Conducted Performance Appraisal Team inspections at Cooper and Maine Yankee.
- Performance Appraisal Team conducted a special safety system inspection at Turkey Point; similar inspection now in progress at Pilgrim.
- Tested new approaches to on-site inspections (expanded resident coverage, more region-based team oriented inspections, and "reactive only" program). Results indicated that:
    - Increase is needed in resident inspection manning of single unit operating sites. (Additional resources included in FY 1986-87 budget.)
    - Team inspections are particularly appropriate for diagnosis of problems.
    - Plant specific PRA's have potential for valuable application in the inspection program.
- Risk based methods are being developed to assist in prioritizing inspection activities to focus on those most safety significant.

OVERSEE OPERATING REACTOR PERFORMANCE (Continued)

- Initiated the Outage Program Team. Inspections in progress at Ft. Calhoun and Dresden.

- Incident response/emergency preparedness:

    - New operations center complete and operational February 1985; extensive training conducted during 4 reactor exercises; used interactive plant simulator code.
    - Observed all (69) emergency preparedness exercises for power reactors.
    - Issued joint NRC/FEMA guidance on conduct of remedial emergency preparedness exercises.
    - Completed incident data communications test at McGuire and La Salle. Awarded contract for ERDS requirements analysis.
    - Increased manning at Operations Center for three actual events (Hurricanes Elena and Gloria, and the Dresden loss of off-site power).

- Responded effectively to unanticipated operating events such as those at Fermi, Farley, Susquehanna, Sequoyah, McGuire, and Davis-Besse.

- Completed approximately 1900 plant specific reactor licensing actions vs 1800 planned. Plant specific licensing action inventory per reactor has remained relatively constant. The total inventory has increased to about 1850.

- Issued licensing amendments for integrated implementation schedules for Duane Arnold and Pilgrim 1; and issued generic letter encouraging volunteer participation in the program.

- Administered about 1100 replacement and requalification examinations to reactor operators.

OVERSEE OPERATING REACTOR PERFORMANCE (Continued)

- Vendor inspection program has emphasized licensee responsibility for vendor suppliers through plant inspections, enforcement actions and information notices.

- Conducted 140 vendor and licensee inspections.

- Inspections of a selected number of reactor licensees have identified instances in which significant vendor information has not been considered/implemented by licensees.

- Arranged for lease/purchase of the Black Fox Simulator.

- TMI-2 Cleanup:

  - Issued 19 safety or technical evaluations and approved 630 detailed procedures that facilitated completion of significant cleanup activities. Timely approval allowed reactor pressure vessel plenum removal.
  - Issued 20 licensing actions to promote expeditious removal of fuel from site.

ANALYZE REACTOR OPERATIONAL EXPERIENCE

- Sent Incident Investigation Team to perform detailed investigation of Davis-Besse June 9, 1985 incident. NUREG-1154 was issued.

- Prepared and issued:

  - Six issues of Power Reactor Events report of operational events.
  - Five AEOD case study reports, 32 engineering evaluation reports, and 24 technical review reports of operational events.
  - Three reports of trend and pattern analyses of various classes of operational events.
  - A trend and pattern analysis report of LER data from 1981 through 1983.
  - Four Abnormal Occurrence Reports to Congress which included 25 Abnormal Occurrences.
  - Over 90 reports to the Nuclear Energy Agency Incident Reporting System.
  - Two Semiannual Reports on AEOD activities.
  - Approximately 100 Information Notices, including 14 vendor related, compared to about the same number in FY 1984.
  - A Comparative Assessment of U.S. and Foreign Dose Experience at nuclear power plants.

- Evaluated INPO's progress in improving the Nuclear Plant Reliability Data System.

ANALYZE REACTOR OPERATIONAL EXPERIENCE (Continued)

- Aging and Degradation in Power Plants:
  - Developed and issued a five-year plan for needed nuclear plant aging research.
  - Arranged to acquire aged-inservice electrical and mechanical components and materials from Shippingport Plant.
  - Completed advanced ultrasonic inspection of Dresden 3 and Vermont Yankee primary piping to provide a basis for NRR decision on restart and resolve conflicting results.
  - Evaluation of current and advanced NDE techniques showed large disagreement in detection and sizing of flaws in steam generator tubes (using retired Surry steam generator). Validation underway via removal and testing of inspected tubes.
  - Confirmed licensing decision to allow short-term operation of 34 reactors with weld-clad overlay repairs in stainless steel BWR pipe by evaluating material removed from the Hatch 2 reactor after one year of operation.

- Data and Uncertainties:
  - Completed evaluation of licensee event reports to obtain failure data on relays and circuit breakers; completed study on initiating event frequencies, and pipe break frequencies.
  - Developed an integrated risk assessment and data acquisition program to provide an integrated data source for use of risk results in NRC decision making.
  - Continued data base development with reliability data from two additional plants on pumps, valves, batteries, chargers, inverters and diesel generators.

LICENSE CURRENT AND FUTURE REACTOR DESIGNS

- New operating licenses restricted up to 5% power were issued to 10 reactors, 8 of which have been converted to full power authorizations. Issuance of full power authorization for Shoreham delayed due to emergency preparedness litigation.
    - During FY 1985, about 42 FTE expended and $6.9 million obligated vs 27 FTE and $1.3 million planned to support licensing reviews of Diablo Canyon 1, Waterford, Comanche Peak, Wolf Creek, TMI-1 restart and TDI diesel reviews.
- Conducted approximately 1240 inspections for reactors under construction, compared to approximately 1580 in FY 1984. Inspections per unit under construction remains at about the same level as in FY 1984.
- Issued 6 SALP reports for reactors in construction.
- 20 construction resident inspectors on-site. At least two resident inspectors assigned to all active construction sites.
- Conducted Construction Appraisal Team inspections at Shearon Harris, Braidwood, Millstone, Clinton, and Byron.
- Conducted review of Independent Design Verification Program (IDVP) for Limerick and Clinton. IDVP report for Hope Creek is under review.
- Conducted Integrated Design Inspections at Perry and Shearon Harris.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

LICENSE CURRENT AND FUTURE REACTOR DESIGNS (Continued)

- Administered about 415 reactor operator examinations for new facilities.
- Staff participating in pilot readiness review program at Vogtle (integrates licensing commitments) and WNP-3 (for resumption of construction).
- Issued NRC/FEMA revised memorandum of understanding to facilitate handling of NRC requests for FEMA findings and determinations.
- Issued proposed rule on Criteria for Decommissioning facilities licensed under 10 CFR Parts 30, 40, 50, 70 and 72 for comment.
- Amended GESSAR II Final Design Approval pursuant to severe accident policy.
- Published proposed Policy Statement for Regulation of Advanced Nuclear Power Plants.
- Sent proposed Nuclear Power Plant Licensing and Standardization legislation to Congress.
- Continued to work with EPRI on the planned submission of the EPRI standard plant requirement document.
- Revisions to 1978 standardization policy underway to reflect severe accident policy.

PREDICT SAFETY IMPACT OF ABNORMAL OPERATING CONDITIONS

- Research results used to provide technical information for resolution of regulatory issues such as Pressurized Thermal Shock, decay heat removal, performance of Emergency Core Cooling Systems, pump operation after a small break LOCA, etc.

- Tests in a Japanese facility under the cooperative 2D/3D program demonstrated the unique behavior of Upper Plenum Injection Systems in Westinghouse two-loop PWRs. These data are now being used by NRC to evaluate UPI calculations submitted by licensees.

- Completed feedwater line break tests and analyses in Semiscale to provide data for assessment of licensee calculations.

- OTIS (single raised loop) tests completed under the joint B&W test program with EPRI, B&W Owners, and B&W. These tests demonstrated effectiveness of B&W procedures to control small break LOCA in plants with raised loop geometry.

- MIST (multiple lower-loop) facility construction on schedule with testing to start end of CY 1985. MIST will investigate small break LOCA and natural circulation issues, raised by TMI-2 accident, concerning coolability of B&W plants using B&W procedures in full-height representative geometry (2 x 4 loops).

- Completed all integral BWR testing in FIST facility. Data have already been used to assess the new GE evaluation model and will be used to assess capabilities to calculate BWR transients.

- International code assessment program formally initiated with first meeting of participants.

PREDICT SAFETY IMPACT OF ABNORMAL OPERATING CONDITIONS (Continued)

- Completed construction of small integral test facility at University of Maryland to investigate alternate facility scaling concept.

- Completed full-height steam generator testing in cooperation with Westinghouse, EPRI, and United Kingdom providing data to verify radiation doses following steam generator tube rupture.

- Issued draft NUREG-0956, "Reassessment of the Technical Bases for Estimating Source Terms" for public comment in July 1985.

    - In February 1985 the American Physical Society completed a review of the technical bases for the report and concluded that some areas of uncertainty needed further research, but generally the technical bases were sound.

    - Severe accident risk analyses will be handled separately in a comparison document, NUREG-1150 scheduled for Summer 1986.

- Fourth and final PBF severe fuel damage and fission product test completed.

    - Metallographic examination of previous tests shows that some PBF test debris and some TMI-2 debris reached full fuel-melt temperatures (3100K).

- Initial NRU full-length tests confirmed rapid clad oxidation models.

PREDICT SAFETY IMPACT OF ABNORMAL OPERATING CONDITIONS (Continued)

- Corium melt-concrete interaction tests are showing lower concrete penetration rates than previous tests using molten metals or thermite. Thus previous penetration rate calculations appears to be conservative.

- Analysis of the hydrogen source and resulting potential for detonable concentrations within large dry containments has been completed and a draft report was issued. Detonable mixtures were not predicted for the best estimate calculation for the surrogate plant (Bellefonte).

- Conducted pressure test of 1/8 scale model steel containment. Model failed at almost five times design pressure.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

RESOLVE REACTOR SAFETY CONCERNS

- Completed approximately 950 multi-plant reactor licensing actions vs 800 planned. Multi-plant licensing action inventory per reactor has declined over time. The total inventory is about 2000.

- Initiated a two plant pilot Integrated Safety Assessment Program.

- Submitted program to implement Quality Assurance Plan to the Commission.

- Unresolved safety issues:

  - Final resolution for Containment Emergency Sump Performance (A-43) planned for October 1985.
  - Issued final rule for Pressurized Thermal Shock. Regulatory guide is under development.
  - Issued generic letter and draft report to resolve Steam Generator Tube Integrity (A-3/4/5).
  - Issued proposed resolution of Seismic Qualification of Equipment in Operating Reactors (A-46) for comment.
  - Proposed resolution of Station Blackout (A-44) submitted to Commission.
  - Development of proposed technical resolutions for System Interaction (A-17), Seismic Design Criteria (A-40), Shutdown Decay Heat Removal Requirements (A-45), Safety Implication of Control Systems (A-47), and Hydrogen Control Measures (A-48) is proceeding.

- Completed final technical resolution for 23 generic safety issues.

- Demonstrated the applicability of a tested reliability assurance program as a basis for Techical Specification reviews. Task Force assigned to examine standard Technical Specifications. Draft report completed. A final report is to be issued late 1985.

RESOLVE REACTOR SAFETY CONCERNS (Continued)

- Seismic Research:
  - Developed complex program plan that involves: large experiments which must be carefully designed to challenge seismic codes into the inelastic region, improved component fragility data base, and seismic margins studies.
  - Completed research showing pipe rupture is highly unlikely for PWR primary coolant loop. Defined improved approach to pipe restraints to improve safety.
  - Completed development of simplified analytical methods to estimate seismic margins and risks of all operating plants in the U.S., including those plants whose design basis earthquake may be increased.
  - Developed methods for calculating probabilistic seismic hazard curves for certain eastern U.S. sites. Supported by continued operation of eastern and central U.S. regional seismic networks.
  - Negotiating possible cooperation with Japan at Tadotsu to extend existing test of PWR loop into the inelastic range to help validate piping computer codes developed by NRC.

- Managing Regulatory Requirements:
  - Central control of rulemaking and independent review of all rulemaking actions. To date, 76 actions reviewed.
  - CRGR reviewed 30 proposed policy and regulatory requirements concerning reactors.
  - Issued Revised NRC Manual Chapter 0514 to improve the effectiveness of implementation of the backfit policy. Conducted 10 Headquarters and Regional office level seminars to assure staff understanding of how to implement policy.

RESOLVE REACTOR SAFETY CONCERNS (Continued)

  - Systematic procedures for performing value-impact assessments have been developed and incorporated into the regulatory analysis guidelines. Developed and automated the retrieval of risk and cost information for conducting regulatory analyses.

- Plant Operations and Risk Analysis Research:

  - Completed review and analysis of Arkansas Nuclear plant PRA and inspection modules as a basis for testing of the recently completed package for applying risk based methods to assist in prioritizing inspection activities to focus on those most safety significant.
  - Provided technical support to NRR in review of the Byron limiting condition of operation submittal and study to revise current Technical Specifications.
  - Completed a pilot study to assess applicability of accident management as a factor in risk reduction.
  - Screened 10 CFR Part 50 to identify regulatory requirements with marginal importance to safety.
  - Provided an independent assessment of the effectiveness of licensee's reliability assurance program and developed the attributes of successful programs. Completed plant implementation and test of reliability program guidelines.
  - Published reference catalog of 11 past PRA's for staff use.
  - Specific PRA results have been used to contribute toward resolution of several USI's, such as Anticipated Transient Without Scram, Pressurized Thermal Shock, and Station Blackout.

- Human Factors Program:

  - Issued proposed regulation changes and guidance on operator examinations for comment.
  - Monitoring industry implementation of accreditation of training.

RESOLVE REACTOR SAFETY CONCERNS (Continued)

  - Published policy statements on training and qualifications.
  - Developed maintenance and surveillance program plan.
  - Prepared Revision 2 to the HFPP, incorporating Commission decisions with respect to industry initiatives and corresponding NRC actions.
  - Submitted proposed policy statement on Fitness for Duty to Commission.

- Submitted to Commission Proposed Rulemaking to revise Standards for Protection Against Radiation.

- Proposed Rules and Amendments:

  - Issued Amendment on Survey Requirements for Radiographic Devices for comment.
  - Issued revision on Criteria for Extraordinary Nuclear Occurrence for comment.

- Final Rules and Amendments:

  - Issued rule on Hydrogen Control for Mark III and Ice Condenser containments.
  - Submitted to Commission rule on Limiting the Use of Highly Enriched Uranium in Domestic Research and Test Reactors.
  - Issued amendment to Codes and Standards (10 CFR 50.55A - Pressure Vessel Code).
  - Submitted to Commission rule on Emergency Preparedness (earthquakes).

- Issued Severe Accident Policy Statement.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

LICENSE AND MONITOR MATERIALS LICENSEES/FUEL CYCLE FACILITIES

- Materials:

  - Completed approximately 5800 nuclear material licensing cases vs 5800 planned.
  - Conducted approximately 2650 inspections of materials licensees compared to approximately 2400 in FY 1984.
  - Issued master materials license (broad license) to U.S. Air Force.
  - Completed transfer to regions of materials licensing responsibility for most Federal licenses.
  - Completed gauge portion of general license study indicating need for rulemaking change and user registry. Began study of generally licensed devices other than gauges.
  - Established a Radiography Steering Committee to develop performance standards for radiographers.
  - Completed final NRC response coordination plan for materials contamination incidents.

    Published study of feasibility of detecting the import of unauthorized radioactive materials into the United States.
  - Effectively handled unanticipated contamination events involving steel well casings from Brazil, instrument packages from Belgium, and contamination at J. C. Haynes facility.
  - Issued proposed revisions to 10 CFR 35 for comment.
  - Completed 14 of the 15 materials standard review plans and companion regulatory guides planned for FY 1985.
  - Issued proposed new rule on well-logging operations for comment.
  - Published an Advanced Notice of Proposed Rulemaking on financial responsibility for cleanup after accidental release of radioactive materials caused by materials licensees.

LICENSE AND MONITOR MATERIALS LICENSEES/FUEL CYCLE FACILITIES (Continued)

- Fuel cycle:
  - Completed 100 fuel cycle facility licensing cases vs 80 planned.
  - As a result of past NFS Erwin incident, special inspection and licensing attention being paid to criticality, radiation safety, and accumulation of materials in unsafe geometries.
  - Remedial actions at 11 of 12 contaminated sites essentially complete. Results of decontamination at final site under review by NRC.
- Uranium Recovery Licensing:
  - Submitted final rule to Commission on Non-Resource Conservation and Recovery Act regulatory changes to conform to EPA mill tailings standards.
  - Continuing interaction with EPA to develop alternate concentration limits methodology.
  - Implementing EPA standards for all 14 existing conventional mills.
  - Concluded agreement on DOE/NRC interface on their Uranium Mill Tailings Remedial Action Program (UMTRAP). Provided comments to DOE on 17 major documents for six mill tailings sites under DOE's UMTRAP program.
  - Completed 125 uranium recovery licensing cases vs 95 planned.

LICENSE AND MONITOR MATERIALS LICENSEES/FUEL CYCLE FACILITIES (Continued)

- Transportation:
  - Completed 145 transportation certification cases vs 110 planned.
  - Responded to transportation accident in North Dakota involving a shipment of uranium concentrate from Canada.
  - Conducted a joint Headquarters/Region III/State incident exercise utilizing the new Operations Center.
  - Assisted FEMA to revise "Guidance for Developing State and Local Radiological Emergency Response Plans and Preparedness for Transportation Accidents."

- Agreement States:
  - Reviewed 27 Agreement State radiation control programs for adequacy to protect public health and safety and compatibility with NRC program at 18 month intervals.
  - Provided 10 radiation safety training courses to State personnel to help maintain the high quality of the radiation control programs.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

REGULATE HIGH LEVEL WASTE

- Reviewed and commented extensively to DOE on 9 DOE draft environmental assessments.
- Commented to DOE on Preliminary Draft Project Decision Schedule.
- Reviewed DOE report on Alternative Means of Financing and Managing Radioactive Waste Facilities and prepared comments for the Chairman to submit to DOE.
- Reviewed DOE's Mission Plan and provided an analysis and testimony which was presented by the Chairman before the House and Senate.
- Commented to DOE on their draft report to the President on disposing of Defense HLW in a commercial repository.
- Developed alternative strategies for oversight review of HLW technical program issues.
- Initiated a pilot project to help define the requirements for an HLW Licensing Information Management System needed to support a 3 year construction authorization decision.
- Provided an analysis of alternatives to the Commission on NRC's use of the Nuclear Waste Fund.

REGULATE HIGH LEVEL WASTE (Continued)

- Published proposed amendments to conform Disposal of High Level Radioactive Wastes in Geologic Repositories (10 CFR 60) to NWPA for:
    - HLW licensing procedures.
    - Site characterization.
    - NRC/State/Tribe interactions.

- Submitted to the Commission an Advanced Notice of Proposed Rulemaking to revise definition of HLW to conform to NWPA.

- Published final rule (10 CFR 60) for disposal of HLW in the unsaturated zone.

- Spent Fuel Storage:
    - Reviewing 2 dry spent fuel license applications. Completed environmental review of VEPCO application; authorized VEPCO to proceed with pad construction in advance of license issuance.
    - Reviewing 6 topical reports for dry cask and module storage; completed reviews of two topical reports.
    - Monitoring DOE development of MRS proposal; anticipate DOE formal proposal for NRC comment in December 1985 and submittal to Congress in January 1986.
    - Sent to the Commission proposed revision to Licensing Requirements for Independent Storage of Spent Fuel and High Level Radioactive Waste (10 CFR 72), to clarify that spent fuel in an MRS could be licensed under the present 10 CFR 72 and to permit storage of HLW in an MRS installation.
    - Issued rule on Adequacy of Spent Fuel Storage.

REGULATE HIGH LEVEL WASTE (Continued)

- Transportation:
    - Established working relationships with some State officials to deal with waste shipments.
    - Jointly sponsored NRC/DOT spent nuclear fuel transportation seminar held in Chicago.
    - Reviewed DOE plans to develop an HLW transportation system that includes a new generation of transport casks, vehicles and handling facilities to be used for shipments to the MRS facility and HLW repository.
    - Published draft report of testing and analysis of the effects of very severe accidents on casks designed to meet NRC regulatory requirements (modal study).
    - Coordination with State agencies on routing and other conditions for spent fuel shipments from West Valley, returning to utility owners. Inspected transportation conditions at West Valley and utility.
- West Valley Demonstration Project:
    - Reviewed and commented on DOE project plan and design for West Valley HLW solidification project.
    - Performed in-depth monitoring visits on implementation of environmental survey and QA programs for DOE West Valley Project.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

REGULATE LOW LEVEL WASTE

- Continuing interaction with EPA to resolve jurisdictional problems related to mixed waste (RCRA).
- Informed licensees of potential restricted access to LLW disposal sites and of the need to develop contingency plans for LLW management.
- Identified several categories of radioactive wastes for which there is currently no state or Federal commitment to provide for their disposal. This provided the basis for one of the Commission's principal concerns in its comments to Congress on proposed amendments to the Low-Level Radioactive Waste Policy Act.
- Prepared draft testimony and extensive bill analyses for three Congressional hearings on amendments to Low-Level Radioactive Waste Policy Act.
- Provided technical assistance to states for pre-licensing guidance related to the development of new LLW facilities, on operating LLW disposal facilities, and on remedial action planning for closed LLW disposal facilities.
- Continuing development of amendment to 10 CFR 61 to meet NWPA requirements regarding financial standards for licensing LLW disposal sites.
- Continuing development of regulatory guidance on alternatives to conventional shallow land burial practices. Developed shallow land burial LLW risk assessment methodology.
- Developed method for predicting long-term LLW performance from laboratory tests.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

PERFORM SAFEGUARDS REGULATORY ACTIVITIES

- Completed 300 reactor safeguards licensing cases vs 340 planned.
- Completed 200 fuel cycle facility safeguards licensing cases vs 100 planned.
- Conducted approximately 270 safeguards inspections at power reactors, 100 at fuel facilities and 30 at non-power reactors, compared to approximately 270 at power reactors, 115 at fuel facilities and 30 at non-power reactors in FY 1984.
- Completed 18 regulatory effectiveness reviews for power reactors vs 18 planned; annual report submitted to Commission.
- Completed 210 transportation and export safeguards licensing cases vs 180 planned.
- Completed review of all 27 material control and accounting guides; 5 obsolete guides withdrawn.
- Reviewing comments associated with the Spent Fuel Shipment rule.
- Evaluated several hundred foreign and domestic threat-related events in support of the Information Assessment Team.
- Analyzed comparison of DOE threat protection and NRC threat protection.
- Completed semi-annual review of the threat environment.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

REVIEW ALLEGATIONS AND CONDUCT INVESTIGATIONS

- Established special technical review groups for allegations at Comanche Peak and Waterford.
- Received about 900 allegations and completed review of about 750 allegations.
- Completed review of 19 vendor related allegations.
- Performed 180 cases (investigations and inquiries) of allegations.
- Issued policy for reviewing and handling late filed allegations.
- Implemented new allegation management system.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

TAKE ENFORCEMENT ACTIONS

- Processed 149 enforcement cases.
- Issued 70 civil penalties totaling $2.7 million.
- Issued final IE Manual Chapter on Implementation of Enforcement Policy.
- Submitted proposed policy on vendor enforcement to the Commission.
- Advisory Committee on Enforcement Policy has conducted 6 meetings and is in the final stages of drafting report. Report scheduled to be issued November 15, 1985.

NUCLEAR REGULATORY COMMISSION
FY 1985 END-OF-YEAR RESOURCE AND PROGRAM REVIEW

MANAGE AND SUPPORT TECHNICAL PROGRAMS

- Building Consolidation:
    - House Subcommittee on Public Buildings and Grounds postponed hearing on NRC consolidation from end of July to end of October 1985.
    - Chairman Young of the Subcommittee toured NRC Headquarters locations in September 1985.
- Cost Analysis Support:
    - Provided cost analysis support for 45 issues and initiated eight new generic cost studies.
    - Issued guidance on cost estimating methods and development of generic cost estimates.
    - Developed procedures to track all regulatory impact analysis activities.
- License Fees billings for FY 1985 were $86.3 million of which about $77.3 million has been collected.
- Provided legal counsel on approximately 6500 administrative matters, 140 enforcement cases, and approximately 1200 matters requiring rule development or licensing support.
- Performed 24 independent audits and follow-ups of NRC operations to assure responsibilities are effectively and efficiently carried out.
- Provided administrative services and logistic support to 3500 employees in 24 buildings at 23 locations.

LIST OF MAJOR ACCOMPLISHMENTS

OCTOBER 1985 TO FEBRUARY 1986

A. NRR ACCOMPLISHMENTS

- Issued 3 Operating Licenses restricted to low-power (Millstone 3, Palo Verde 2, and Catawba 2); issued 2 full-power authorizations (River Bend 1 and Millstone 3). Currently operating license applications for 27 plants are under review.
- Authorized restart of TMI-1.
- Completed about 1200 safety evaluations for operating reactors.
- Heading task force on TVA.
- Issued final technical resolution for Unresolved Safety Issue (USI) A-43, Containment Emergency Sump Performance. Technical resolutions are being developed for remaining nine USIs.
- Currently 90 Generic Safety Issues are in the process of resolution.
- Final revisions to 10 CFR 55 Operator Licenses is nearing completion.
- Continuing evaluation of INPO training accreditation program.
- Work to survey current maintenance practices in the nuclear industry and to evaluate their effectiveness is nearing completion.
- Severe Accident Policy Implementation Plan developed and under final Commission consideration.
- Began oversight of licensee defueling operations at TMI-2

B. NMSS ACCOMPLISHMENTS

- Met major milestones in NWPA by:
  - Reissued Statement of Concurrence on DOE Siting Guidelines.
  - Submitted comments to DOE on Monitored Retrievable Storage proposal.
  - Submitted comments to DOE on Transportation Institutional and Business Plans.
  - Providing comments to DOE on Project Decision Schedule.
- Conducted investigation of Sequoyah Fuels Corporation incident.

- Initiated action to review comparability of protection for weapons useable material at NRC and DOE facilities.

- Created task force to implement NRC actions required by the Low-Level Radioactive Waste Policy Amendments Act of 1985.

- Completed approximately:

    - 2,000 fuel cycle facility and materials licensing cases.

    - 30 transportation package design approvals for shipment of radioactive and nuclear material.

    - 30 uranium recovery licensing cases.

    - 230 safeguards licensing cases.

- Published final rule to amend NRC mill tailings regulations to conform to the non-groundwater EPA standards for tailings. Proposed rule for groundwater requirement being prepared.

- Reviewing six topical reports for spent reactor fuel dry cask and module storage.

C. RES ACCOMPLISHMENTS

- The cooperative Electric Power Research Institute/NRC Piping Program has completed the first phase dynamic pipe component testing, showing that ASME Code design rules need to be revised reflecting that fatigue-ratcheting, not collapse, is the primary failure mode.

- Completed all testing in the Semiscale facility in Idaho. Final tests explored small break loss-of-coolant accidents without high pressure injection.

- Reviewing public comments on the draft NUREG-0956, "Reassessment of the Technical Bases for Estimating Source Terms". Work on final issuance of NUREG-0956 is nearing completion.

- The Source Term Code Package recommended in NUREG-0956 is being applied to risk rebaselining estimates for six referenced plants. Thus far all risk important sequences for five (Surry, Peach Bottom, Sequoyah, Zion, Grand Gulf) of the six reference plants have been analyzed. The results of this project will be published as NUREG-1150.

- Published proposed major revision to 10 CFR Part 20 "Radiation Protection Standards" for Public Comment.
- Conducted severe fuel damage test in NRU test reactor important for resolution of key hydrogen issues.
- Proposed rule on Emergency Preparedness for Fuel Cycle and Other Radioactive Materials licensees nearing completion.
- Tested first large scale category I structure fabricated with prototypical concrete and reinforced steel.
- Completed Final Rule on conversion of highly enriched uranium to low enriched uranium fuel for research reactors.
- Proposed revision to 10 CFR Part 72 to clarify that it covers Monitored Retrievable Storage developed and under final Commission consideration.

D. IE ACCOMPLISHMENTS

- Conducted a new program of Safety System Functional Inspections at Turkey Point, Pilgrim, and Arkansas Nuclear One plants, which places a better focus on inspection efforts.
- Received Commission approval of the Quality Assurance Report to Congress.
- Continuing Readiness Review Program with Vogtle Unit 1.
- Conducting a variety of design inspections to assess the quality of design implementation at plants under construction and operating:
  - Engineering Assurance Programs at Milestone 3, Nine Mile Point 2, and South Texas.
  - Outage Design Inspection at Ft. Calhoun and Dresden.
  - Review of Comanche Peak design adequacy program.
  - Review of TVA design change process.
  - Design aspects of Vogtle Readiness Review.
  - Independent Design Inspections at Harris.
  - Review Independent Design Verification Programs at Hope Creek and Clinton.

- Conducted Construction Assessment Team inspections at Palo Verde and South Texas.
- Revised Policy Statement on Fitness for Duty provided to Commission.
- Successfully procured and installed a BWR simulator at the Technical Training Center to increase quality of inspector and examiner training.
- Issued 25 proposed civil penalties and 3 orders. Provided comments to the Commission on the Enforcement Advisory Committee recommendations.

E. OTHER PROGRAM ACCOMPLISHMENTS

- Established a program for independent evaluation of significant operating events. Under the program Independent Investigative Team reviews of 3 events were conducted:
    - Davis Besse (FY 85)
    - San Onofre
    - Rancho Seco
- Reached the fully operational stage in the NRC Trends and Patterns Program - This program provides a systematic appraisal of the operational experience of the U.S. nuclear industry.
- About to issue proposed revisions to 10 CFR 2 on Ex Parte, Separation of Functions and Hearing Process.
- Finalized NRC Manual Chapter 0514 on Management of Plant-Specific Backfitting.
- Safety Goal Evaluation implementation proposal developed and under Commission consideration.
- Published Commission's 1986 Policy and Planning Guidance.

MR. ASSELSTINE: With your permission, I have a list of NRC major accomplishments which I would like to submit for the record.

(The information follows:)

Commissioner Asselstine's comments on the request for a summary of major accomplishments in Fiscal Year 1986.

Some examples of NRC's accomplishments for the specified period during Fiscal Year 1986 are listed below.

- ° Issued 3 operating licenses restricted to low power; issued 2 full-power authorizations.
- ° Monitored restart of TMI-1.
- ° Began oversight of licensee defueling operations at TMI-2.
- ° Submitted comments to DOE on Monitored Retrievable Storage Facility proposal.
- ° Provided comments to DOE on Draft Project Decision Schedule for developing the HLW repository.
- ° Issued technical resolution for Unresolved Safety Issue (USI) A-43 (Containment Emergency Sump Performance).
- ° Developed an NRC action plan for addressing TVA problems (preliminary to receipt of TVA's corporate plan).
- ° Investigated Sequoyah Fuels Corporation accident.
- ° Approved final rule on conversion of HEU to LEU fuel for non-power reactors.
- ° Published proposed major revision to 10 CFR Part 20 for public comment.
- ° Sent final action on the QA study to Congress.
- ° Published final rule conforming NRC uranium mill tailing regulations to EPA non-groundwater standards.
- ° Report of Advisory Committee's Enforcement Policy, and staff proposal, submitted to the Commission.
- ° Independent Investigation Team reviews of 3 events were concluded.
- ° Achieved fully operational NRC Trends and Patterns Program, which is a step toward providing a more systematic appraisal of operating experience.

- Completed reviews of licensee extension requests for environmental qualification of electrical equipment, and moved ahead with EQ compliance inspections.
- Completed all testing at the semiscale facility in Idaho.
- Analyzed risk important sequences for five of the six plants in the Risk Rebaselining Project.
- Cooperative EPRI/NRC Piping Program has completed first phase dynamic pipe component testing.

Most of these accomplishments have been the result of on-going efforts that began prior to FY 1986. Past resource reductions have delayed some of them, and current reductions may also delay their completion or implementation.

MR. BEVILL: The Committee has repeatedly expressed concern with the NRC duplicative and redundant staffs. The last several Committee reports have specifically questioned the need for redundant legal and inspection organizations. Last year, the Committee strongly urged the NRC to combine the Office of General Counsel and the Office of the Executive Legal Director. In addition, the Office of Investigations should be merged with the other inspection and examination organizations under the Executive Director. What is the status of your efforts to comply with the Committee guidance?

CHAIRMAN PALLADINO: The Commission, in this period of decreasing resources, has examined a number of methods to use more efficiently its remaining staff. Among these is the combination of its two existing legal offices, the Office of the General Counsel and the Office of the Executive Legal Director. The Commission has requested a detailed plan for this consolidation and will receive it on April 15. The Commission expects to make its decisions on this consolidation in time to implement them by the start of FY 1987.

The Commission in order to streamline its decisionmaking process, will be relying on the Staff for development and evaluation of policy and will therefore be abolishing its Office of Policy Evaluation at the end of this fiscal year. The Commission is also examining ways to make its automated data processing operation both more efficient and more cost effective.

No decision has been made on your recommendation to make the Office of Investigations (OI) a line organization, like the Office of Inspection and Enforcement, under the supervision of the Executive Director for Operations.

MR. BEVILL: How does the workload for the Office of Investigations (OI) compare with each of the years since OI was created in 1982?

CHAIRMAN PALLADINO: As of March 25, 1986, the OI investigative inventory consisted of 158 open cases. This compares with the 164 cases open at the end of 1985, 145 at the end of 1984, 91 at the end of 1983, and 47 at the end of 1982.

Of the 158 cases currently open, 75 are not being worked due to lack of resources.

MR. ZECH: I have repeatedly urged OI to work with the staff and decide whether the cases which have been pending the longest require an investigation from the standpoint of their safety significance and, if so, what priority should be assigned. There is a system now in effect which is supposed to insure that responsible managers evaluate requests for investigations. This same system could be used by the staff to reevaluate prior requests for investigations which have been in the OI inventory for some years. I have emphasized to OI that continuing to hold the oldest cases in the inventory without any plan of action is unacceptable.

MR. ROBERTS: The Commission cannot decide whether OI resources are significant until the present inventory of cases is evaluated against the threshold criteria recently approved by the Commission.

MR. BEVILL: Has the NRC determined the threshold for allegations, especially late allegations?

CHAIRMAN PALLADINO: The NRC has not directly established thresholds regarding allegations. It has, however, developed procedures that would allow the disciplined and systematic tracking and resolution of all allegations brought to the attention of the NRC. These procedures are fully described in draft NRC Manual Chapter 0517 which is currently undergoing review within the Agency.

MR. BEVILL: A significant portion of the budget for Inspection and Enforcement Programs is for specialized (contractor) technical assistance. To what extent do outside contractors perform "inspection" activities for the NRC?

CHAIRMAN PALLADINO: Contractors are used to assist in performing inspection activities when specialized skills are required which are not available in the NRC staff or when it is not economically feasible to maintain a capability in NRC. Policy dictates that contractors be accompanied at sites by NRC inspectors who have overall responsibility for the inspection activity. Contractors provide factual findings or technical judgements, but NRC inspectors or managers make all regulatory and safety judgements regarding compliance with NRC requirements and safety principles. Typical examples of uses of contractors to support inspection activities include: independent testing and analysis of materials; specialist assistance in such areas as radiography, welding and electronics to augment team inspections; specialized inspection assistance to address problems identified at Comanche Peak, TVA facilities, Waterford, etc; aerial radiological measurements; program development studies in such areas as quality assurance and incident response; procurement of training services and reactor simulator time for training of inspectors.

MR. BEVILL: Has the Commission recently reassessed its enforcement program?

CHAIRMAN PALLADINO: Yes. Minor revisions to the NRC enforcement policy were published in the Federal Register (FR 8583) on March 8, 1984. In conjunction with approving these revisions, the NRC decided to establish a committee of outside experts to review the NRC's enforcement policy to determine whether it has achieved its defined purposes and to provide the Commission with recommendations on any changes it believed advisable. The Advisory Committee was established on August 31, 1984, and after taking testimony from NRC staff, industry, and others on the effectiveness of the policy, the Advisory Committee issued its report on November 22, 1985.

The Advisory Committee was asked to determine if the current enforcement policy is improving compliance with NRC requirements, has any negative impacts on safety, and may be replaced by alternative or more effective enforcement options to improve compliance with NRC requirements. The Advisory Committee concluded that "the policy's impact has been modest in magnitude and psychological in nature," and did not recommend any significant changes to the existing enforcement policy except in the area of material false statements.

The NRC staff agreed with the Advisory Committee's overall assessment of the program, which included an endorsement of the eight week goal for issuing enforcement actions and recommendations that the number of requests for investigation be reduced; that enforcement conferences be serious exchanges of views between the staff and the licensee, with the licensee to be given as much notice as practical; that press releases be released 24 hours after the licensee receives formal notice of an enforcement action; that ways of reducing regional inconsistencies be considered; and that the frequency of inspection be based on licensee's performance.

The Advisory Committee also suggested minor wording changes in the existing policy involving "economic benefit" and mitigation of Severity Level I violations and recommended that civil penalties never be addressed to individuals, that technical specifications be reformed, and that a study be conducted for a means to collect data on preventable safety-significant violations.

Revisions to the rule on material false statements have been proposed to the Commission. Not all of the Commissioners have voted on the proposed revisions at this time.

MR. BEVILL: What steps has the Commission taken in response to the findings of the Committee's management study to improve the organization and management of the NRC?

CHAIRMAN PALLADINO: In letters dated April 2 and June 18, 1985, the Commission responded in considerable detail to the Committee's management study of the NRC. Among the major changes in Commission organization and management over the last year are the following. The Commission published a final backfit rule and a supporting internal manual chapter on plant-specific backfits; the purpose of these is to assure that a backfit required of a licensee provides an overall substantial safety benefit and is commensurate with the cost involved. The manual chapter assures that backfitting decisions will be made by executive management in a formal, rational process that examines the safety significance and costs in a objective, quantitative manner.

A major concern identified by the Committee's report was a fragmentation of staff effort, i.e., different staff offices emphasizing different aspects of safety and requiring duplicative effort from licensees. In order to provide a more coordinated effort, the Commission has over the past year emphasized a coordinated team approach to the regulation of specific licensees. Examples include the use of incident investigation teams at licensees such as Davis-Besse, San Onofre and Rancho Seco which have had significant operating incidents. These teams are staffed with representatives from various offices but report directly to the Executive Director for Operations rather than the individual offices. Similarly, the staff is making greater use of a team inspection concept by which representatives of all involved offices go to a utility to inspect jointly a specific area. In the case of TVA, an executive management team has been formed consisting of the senior executives from all the involved offices and responsible directly to the EDO for all matters affecting TVA. By these methods we hope to reduce duplication of effort and to minimize the burden on our licensees consistent with our public health and safety responsiblities.

The Commission now meets with its Regional Administrators on a quarterly basis to discuss areas of mutual concern. Beyond this the Regional Administrators are meeting formally among themselves and with the EDO for two or three days each quarter, and are conferring by conference call at least weekly.

The Commission is also making efforts to allow self-regulation to work where licensees indicate a willingness and capability to undertake such self-policing actions. Several rulemakings and policy statements have been identified for possible deferral for a period of several years to allow industry groups to attempt to provide an alternative to detailed prescriptive regulation. These areas include training, access authorizations for vital areas and fitness for duty.

With your permission, I would like to submit for the record my March 25, 1986 letter to you summarizing some of the major developments that have taken place at the NRC since the study was issued.

(The information follows:)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

March 25, 1986

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

On March 15, 1985, staff of the House Committee on Operations completed a study of the management and organizational structure, processes, procedures, and operations of the Nuclear Regulatory Commission. The NRC responded to you on April 2, 1985. This letter is a follow-up on our previous communication.

In the time that has passed since our initial review of that report, a number of developments have occurred at NRC. I would like to take this opportunity to apprise you of some of those developments.

- The backfit rule has been adopted. This will require a formal analysis for backfits required by NRC in the future.
- A strategic planning initiative was approved. A draft document that provides a baseline for developing a Five Year Plan for NRC is currently under Commission review.
- The Office of Nuclear Reactor Regulation was reorganized to accommodate the continuing shift to a predominantly operating reactor environment.
- The Commission has decided to consolidate the two legal staffs of NRC -- the Office of General Counsel and the Office of the Executive Legal Director. The aim thereby is to effect considerable savings in staff by the combination of these two offices.
- The Commission has decided to eliminate the Office of Policy Evaluation (one of the Commission-level staff offices) and reallocate the resources currently assigned to it.

All of these were mentioned in the Committee report and were within the Commission's ability to modify. Other important areas in the report, notably the single administrator concept, fell outside the Commission's sphere of control.

Sincerely,

Nunzio J. Palladino

cc: Rep. John Myers

MR. BEVILL: What else is planned?

CHAIRMAN PALLADINO: We have recently attempted to extend this concept from personnel-associated matters to hardware. Because of recent events at Davis-Besse and Rancho Seco, we are concerned about the impact on safe operation of B&W reactors of non-safety systems which exhibit apparent low reliability. Rather than define in detail a program of our own to improve the reliability of these systems, we have invited the B&W owners group to undertake such an effort. If this attempt to identify the need and have the affected licensees provide the cure is successful, we will extend it into other areas.

EMERGENCY PLANNING ZONE

MR. BEVILL: I understand that a utility proposed a reduction in the emergency planning zone and that you have told them the request is premature because it relies on technical information still under review by industry and the NRC. What is the schedule for the completion of the review?

CHAIRMAN PALLADINO: Baltimore Gas and Electric Company (BG&E) submitted an application on November 18, 1985 to reduce the Calvert Cliffs Emergency Planning Zone (EPZ) from a radius of approximately ten miles to two miles. On February 14, 1986, we responded by informing BG&E that their application was premature and that the technical basis (involving source terms and other severe accident issues) required to support their application was under development. At the present time, we expect to issue NUREG-0956 "Reassessment of the Technical Basis for Estimating Source Terms" in the summer of 1986. The staff has also been working with the industry group IDCOR on several technical issues related to severe accidents and we expect to issue a draft evaluation in the early Fall of 1986 for public comment. This draft report, along with the public comments and the information contained in NUREG-0956, will be utilized by the staff in reviewing the BG&E application. We anticipate initiating this review in early 1987 leading to a conclusion at the end of 1987. This schedule includes an estimate of time for conducting a hearing, should a hearing be necessary.

MR. ROBERTS: The Commission should consider segmenting the research on source term so that discrete results can be used as they are finalized.

MR. BEVILL: Considering the NRC history of delays when do you expect to change emergency planning regulations to conform to the new research on source term?

CHAIRMAN PALLADINO: Clarification of emergency planning guidance was under consideration several years ago based on risk information in WASH-1400. However, a decision was made to defer any changes in emergency planning guidance to make sure that risk information based on new source term analyses would not contradict the existing information. It was concluded in the recent reassessment that many source terms were lower than those found in WASH-1400, but that some were larger. Therefore generalization is inappropriate although it may be used in specific cases. The new source term analytical procedures will be used by the NRC to derive new risk information for six specific plants. A major part of that task is to assess the uncertainties in the risk. The new risk information will be published in the early fall of 1986. Regulatory change, if it is warranted, would follow publication of the risk and the uncertainty information, with the usual opportunity for public comment on the technical justification for the proposed change. We estimate that this proposed rulemaking could be issued in the first half of CY 1987.

The progress that the NRC has made to date on the complex area of source term phenomenology has come from an extensive research program comprised of government as well as foreign and domestic research efforts. In order to have any changes in regulatory practice be based on sound science, which is necessary for protection of the public health and safety, a broad-based acceptance of the phenomenological data and analytical procedures is required. This process, including validation of the codes and analytical procedures, is being actively pursued.

MR. BEVILL: It appears quite possible that we could be operating with an unnecessarily burdensome regulation for 10-mile emergency planning zone. Please describe how the million of research dollars led us to a resolution of this issue.

CHAIRMAN PALLADINO: We have been working with the industrial group IDCOR on the issues of severe accidents and source terms, and even though numerous technical issues have been resolved, others remain to be resolved. Also, the staff is presently evaluating the numerous public comments as well as the ACRS comments received on the draft NUREG-0956, "Reassessment of the Technical Bases for Estimating Source Terms." The extent of the technical questions raised in these comments will require considerable effort before NUREG-0956 is published in final form in the summer of 1986. We are also establishing an interface between the NRC staff and the Atomic Industrial Forum (AIF) to provide a forum for industry input as well as technical exchanges on source term related issues. The NRC staff will use the insights from all of these activities to develop options on a number of source term related issues.

We are committed to a reassessment of emergency preparedness (Appendix E to Part 50), using as a technical basis the six-plant risk reappraisal to be published in the fall of 1986. If burdens are found to be unnecessary, they will be removed.

The research dollars expended have provided the technical and scientific basis for the source term reassessment and the six-plant risk appraisal.

MR. BEVILL: When will you issue the final source-term regulations?

CHAIRMAN PALLADINO: The first concrete regulatory activity to be supported by source-term research is the implementation of the recent severe accident policy statement for operating reactors and operating license reviews. Research results in the form of existing computer codes, documented results for reference plants, and recent experimental observations will form the basis for review and auditing of the industry's search for risk outliers for these plants, and development of PRA guidelines.

Additionally, about a dozen potential changes in rules and regulatory practices have been proposed. Upon completion of the scientific reappraisal as described in NUREG-0956 in the summer of 1986, the current source-term technology will be ready to support active work on these policy changes. In many cases work on policy changes also requires updated risk information, which goes beyond the source-term science and thus cannot be initiated until NUREG-1150 is published for comment in the fall of 1986. However, it is important to initiate planning on these regulatory changes now since it is only in the context of specific applications that significant issues can be resolved and uncertainties accommodated.

MR. BEVILL: Will you review the utility request for a reduction in the emergency planning zone when the final regulations are issued?

CHAIRMAN PALLADINO: As noted in Mr. Denton's letter of February 14, 1986 to Mr. J.A. Tiernan of Baltimore Gas and Electric Co., the NRC indicated that it planned to defer action on the utility request until the draft NRC findings cited by the utility as the basis for their request became final. As discussed earlier, review of the utility request will be initiated when the draft NRC findings become final, a draft evaluation on technical issues related to severe accidents is issued for public comment and an applicable plant analysis is available for review.

MR. BEVILL: How many requests for relief from emergency planning zones do you anticipate?

CHAIRMAN PALLADINO: NRC deferred action on the Calvert Cliff's request for emergency planning zone relief until NRC takes a final position on severe accident issues and reassessment of the technical basis for estimating source term. Based on this response we would not anticipate many utilities submitting such a request, at least until emergency planning regulations are reexamined. We now expect to have a report by late summer that will lay down basic, fundamental science to be used for generating new information on source terms. Following it, we expect to be able to go back and take another look at the emergency planning issue. I should just note officials at the Seabrook facility have in the past expressed interest in obtaining such relief for their reactor.

MR. BEVILL: Please describe the research to date on source terms and the dollar amount of research by NRC on this issue by Fiscal Year.

CHAIRMAN PALLADINO: Research on source terms (alternatively referred to as severe accident research program) is conducted in three areas, namely severe accident evaluation, containment integrity, and severe accident risk. The principal recommendation of Draft NUREG-0956 (the NRC staff report on reassessment of source term science) was that the source term methodology described therein be used to reevaluate regulatory practices and assumptions that are based on the previous severe accident risk study and source term reference document (WASH-1400 and TID-14844). This recommendation will also be contained in the final version of NUREG-0956.

The first area of research mentioned above consists of investigating such phenomenology as in-vessel fission product (FP) release, recirculation of coolant in the reactor coolant system (RCS), FP and aerosol deposition in the RCS, in-vessel hydrogen generation, core slumping and collapse, steam explosions, direct containment heating, core-concrete interaction, ex-vessel FP release, revaporization of FPs in the RCS, hydrogen ignition and burning, and FP removal efficiency of ice beds. The understanding of the above items is used in accident sequence analysis and in development of such computer codes as the source term code package (STCP), and supporting detailed mechanistic codes. The second area of research consists of studying containment performance and equipment performance. The third area of research consists of the accident sequence evaluation program, the severe accident risk and rebaselining and risk reduction program, and the MELCOR risk code development program. In general the research is about two-thirds to three-fourths complete, with the Severe Accident Evaluation being the most complete. With your permission, I will submit a table of the costs to date for the record.

(The Information Follows:)

SEVERE ACCIDENT RESEARCH PROGRAM
(SOURCE TERM)
(DOLLARS IN MILLIONS)

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86
SEVERE ACCIDENT EVALUATION	$26.3	$35.6	$48.4	$47.1	$37.4	$29.9
CONTAINMENT INTEGRITY	1.2	3.0	5.4	6.0	4.6	4.2
SEVERE ACCIDENT RISK	5.2	7.8	8.1	7.8	4.5	4.5
TOTAL	$32.7	$46.4	$61.9	$60.9	$46.5	$38.6

MR. BEVILL: Describe the draft of source-term regulations and the comments to date.

CHAIRMAN PALLADINO: There are no draft source term regulations. The staff's "Reassessment of the Technical Bases for Estimating Source Terms," NUREG-0956, recommended, among other things, that the technology described in the report be used to reevaluate the source term information used by the agency. It also recommended that in any regulatory application, the uncertainties and margins be carefully considered. Some commenters have interpreted those statements as proposing specific regulatory changes. This is not the case.

MR. BEVILL: Is source-term knowledge relating to Pressurized Water Reactors with large dry containments well enough established and understood at this time to proceed with regulatory changes during the interim period when public comments are being resolved for those source-term issues not related to large dry containment Pressurized Water Reactors?

CHAIRMAN PALLADINO: It is premature to speculate at this time as to whether the status of knowledge on risk and uncertainties for large dry PWR plants is so far advanced relative to other plant types as to warrant changes for that plant type only. However, the level of knowledge about source term issues, and the associated level of uncertainty in that knowledge, is sufficient to begin technical reviews for some changes in regulatory practice. Three issues have been identified for short term review: Use of spray additives in Pressurized Water Reactor (PWR) containment spray systems, credit for fission product scrubbing in Boiling Water Reactor (BWR) suppression pools for design basis accidents, and incorporation of new information in near-term Environmental Impact Statements. Final action on these short-term issues will take place after the July 1986 issuance of NUREG-0956. The review of regulatory practices for many other areas of potential change must await the risk information and the uncertainty study which are expected to be available in the early fall of 1986. This risk and uncertainty information will indicate whether changes on the basis of plant type are appropriate.

MR. ROBERTS: Again, I believe the Commission should consider segmenting research on source term so that discrete results can be used as they are finalized.

MR. BEVILL: Your generic report on source-term, NUREG-0956, was supposed to be out in final form last summer; now we're looking at this summer. Please explain.

CHAIRMAN PALLADINO: The draft of NUREG-0956 was issued for public comment, as scheduled, in August of 1985. In response to numerous requests, the public comment period was extended to January 7, 1986. Sixty-eight comment letters, comprising about 700 pages, were received. Based on these, many changes will be made in the document, although the basic recommendations will not change. The more important comments were those concerned with: The accuracy and defensibility of the staffs conclusions in the report, the adequacy of the peer review of the analytical procedures, the magnitude of and procedures for estimating the uncertainties, the status of the comparison of the relevant analytical models with experiments (validation), uncertainties in the chemical models, especially those for iodine and status of the ability to predict the behavior of the containment. The uncertainties and the prediction of containment behavior will be more properly addressed in the staff's document on the risk of six specific plants, NUREG-1150, but the other comments will be addressed in the final version of NUREG-0956, scheduled to be published in the summer of 1986.

MR. BEVILL: Your document on the implications of source-term research on specific nuclear plants, NUREG-1150, was supposed to be out in draft form late last year; now it's apparently delayed until early 1987. Please explain.

CHAIRMAN PALLADINO: The original schedule (made in the spring of 1985) for the development and publication of NUREG-1150, NRC's integrated risk assessment report, called for publication of a draft report for public comment and peer review by late summer/early fall 1986. The current schedule for this report calls for its publication for public comment by September 30, 1986. Issuance of a final version of NUREG-1150, reflecting the comments of the public and scientific community, is tentatively scheduled for the spring 1987.

MR. BEVILL: What is the status of the Shoreham plant and its emergency response plan?

CHAIRMAN PALLADINO: A fuel load and cold criticality testing license was issued to Shoreham on December 7, 1984. Cold criticality was achieved on February 15, 1985. On June 14, 1985, a favorable ASLB decision on the TDI diesels was issued. That decision authorized a 5 percent license which was issued on July 3, 1985. Low power testing is substantially complete.

The plume exposure pathway Emergency Planning Zone for Shoreham lies wholly within Suffolk County. In March 1983, the Suffolk County legislature asserted that effective offsite emergency planning for radiological emergencies could not be done because of what it considered to be the unique geographical configuration of Long Island. The county has therefore refused to participate in offsite emergency planning. The Governor of New York has stated that he will not force the county to participate in emergency planning for Shoreham, and has participated as a party in the NRC's emergency planning hearings in support of the county's position.

Without the support of either the state or the county, the applicant has established its own Local Emergency Response Organization and Plan, to enable it to perform all of the duties normally assumed by state and local governments.

On April 17, 1985, the Licensing Board for emergency planning for Shoreham ruled that, although LILCO's offsite emergency plan is generally adequate, LILCO does not have the legal authority to perform some of the required emergency functions set out in that plan. On August 26, 1985, the Board issued a concluding partial initial decision finding that because of LILCO's inability to implement its offsite emergency response plan and because of the refusal of the state and county to cooperate, a full-power license may not issued for Shoreham. Appeals of the April and August emergency planning decisions were filed with the Appeal Board by both LILCO and the intervenors. On October 18, 1985, the Appeal Board upheld the Licensing Board's decision that LILCO does not have the legal authority to implement its offsite emergency plan. LILCO has appealed this decision to the Commission. The Commission has decided to review the Appeal Board's October 18, 1985, decision following the Appeal Board's resolution of other emergency planning questions under appeal. Resolution of the offsite emergency planning issue, including the performance of an emergency plan exercise, is required before operation above 5 percent power. An exercise of the LILCO emergency plan was conducted on February 13, 1986. The NRC inspection report of the onsite portion of the exercise and the FEMA report on the offsite portion of the exercise are in preparation. Preliminary indications are that the licensee adequately demonstrated its onsite emergency response capabilities. FEMA's preliminary evaluation was generally positive with the potential for some deficiencies. Additional licensing delays may occur as a result of a likely hearing of exercise-related issues. Moreover, some additional emergency planning hearings may be needed as a result of an Appeal Board decision (ALAB-832) which agreed with some of the County and State's arguments that the Licensing Board committed errors in some of its emergency planning rulings. That Appeal Board decision is subject to Commission review.

BACKFITTING

MR. BEVILL: This Committee has historically been critical of the NRC handling of "backfitting." Please describe the backfitting rule promulgated by NRC last October.

CHAIRMAN PALLADINO: The backfitting rule, 10 CFR 50.109, requires that a new discipline and more systematic structure shall be applied to the imposition of new or revised requirements for nuclear power plants.

The fundamental statement of the rule is that the Commission shall require the backfitting of a facility only when it determines, based on a systematic and documented analysis, that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection.

The systematic analysis required by the rule is described in terms of nine specific "factors" that should be considered in reaching a determination on any proposed change which is intended to be imposed by the NRC. The EDO's responsibility is also detailed. As chief staff officer of the NRC, he is explicitly identified in the rule as the officer responsible for implementation of the backfit rule.

The rule also defines what backfitting is and defines conditions under which the analysis and determination need not be made. These two conditions are (1) when a modification is necessary to bring a facility into compliance with existing rules or orders of the Commission or written commitments by the licensee, and (2) when an immediately effective action is necessary to assure that the facility poses no undue risk to the public health and safety.

MR. ASSELSTINE: Subsequent to the publication of the backfit rule, the Commission decided that the analyses and determinations required of the backfit rule need not be made for new or modified rules or staff interpretations of rules if such actions amount to a relaxation of safety standards.

MR. BEVILL: The General Accounting Office (GAO) recently released a report that praises the backfitting rule promulgated by the NRC. Their report documented NRC staff-mandated modifications to nuclear power plant equipment and operating procedures that actually diminished plant safety in many cases. Please comment.

CHAIRMAN PALLADINO: Since the November 1981 creation by the Commission of the Committee to Review Generic Requirements (CRGR), the NRC worked to achieve major revisions in managing the promulgation of new requirements. The CRGR was established in 1981 to control generic requirements, and by late 1983 the staff had established draft procedures to deal with plant-specific backfitting. The Commission recognized in this period that a historical review of all plant modifications required by staff would show that not all had been equally effective in ensuring or improving plant safety. The new backfit rule, effective in October 1985, and the implementing policy and procedures now in place are a codification of changes that have been in progress since 1981. The GAO has reported favorably on these changes.

The GAO report, for which research was finished in 1984, reported three specific instances of backfit requirements having "questionable safety impacts." Only one of these cases, the 1977 regulatory guidance calling for cold fast starting of emergency diesel generators, involved a potential decrease in overall safety. Subsequently, in July 1984, licensees were requested to avoid cold fast starts of diesel generators. Two other issues discussed by GAO were water-level instrumentation for pressurized water reactors, and instruments to measure boron concentration in reactor coolant water. While the water-level measurement method and safety benefit were controversial, NRC senior managers determined that the additions proposed by the staff were highly desirable and the staff continues to pursue adequate implementation by industry. The issue for further instrumentation to measure boron concentration levels in reactor coolant during plant shutdown was dropped and never was made a requirement as a result of staff prioritization analyses that showed a low safety benefit to be derived.

The revision of NRC backfitting regulations and policy is now essentially complete and is expected to result in future improved regulatory effectiveness and stability, while continuing to protect the public health and safety.

MR. BEVILL: The rule was necessary, GAO implied, because the NRC staff simply could not discipline itself. GAO still concludes, though, that it's too early to really evaluate the effectiveness of the rule's implementation.

Are you satisfied that the NRC staff understands the intent of the majority of the Commission regarding interpretation of the backfit rule?

CHAIRMAN PALLADINO: We feel at this time that the staff has a good understanding of the intent of the majority of the Commission regarding interpretation of the backfit rule, 10 CFR 50.109.

During 1985 staff seminars were held in three headquarters offices and the five regional offices to explain and discuss the principles of backfit management as developed at that time and expressed in documented staff policies and procedures. Such staff seminars will be repeated this year.

MR. BEVILL: What procedures are being put in place to monitor and oversee the staff's adherence to the rule?

CHAIRMAN PALLADINO: The Committee to Review Generic Requirements has been in operation since November 1981 and its policy and procedures even before 1985 contained elements closely paralleling the backfit rule of October 1985. Since that time, the CRGR Charter has been revised by the staff to conform to 10 CFR 50.109, and is now pending approval by the Commission.

The Executive Director for Operations, the chief staff officer of the NRC, is explicitly identified in the rule as the responsible officer for implementation of the backfit rule.

All staff senior executive service managers who may be involved in the processing of backfit actions have performance elements related to backfitting in their SES contracts.

Finally, the Plant-Specific Backfit System, a computerized data base management system accessible at terminals in each region, in headquarters offices, and in the EDO's office, has been operative since June 1985. This system is designed to retain information on backfit actions, to present status and pending responsibilities for actions, and to make it available to managers at appropriate locations.

MR. BEVILL: Please describe the NRC efforts to streamline utility Technical Specifications and to what extent do you consider this program to be voluntary.

CHAIRMAN PALLADINO: The NRC presently has ongoing a Technical Specification Improvement Program. The elements of the program are based upon the recommendations of two studies performed in 1985, one by the NRC and one by the Atomic Industrial Forum (AIF). The principal objective of the program is:

> "A complete rewrite and streamlining of the Technical Specifications based on a set of simple and straight forward objective criteria for determining what requirements should be included."

NRC's Technical Specifications improvement activities are being coordinated with the Nuclear Industry through the AIF. The efforts of both parties are being integrated toward a common goal of achieving the needed improvements as soon as possible. The preliminary results from application of objective criteria to the contents of one plant's Technical Specifications indicates that approximately 40% of the existing Technical specifications at that plant could be deleted without any significant increase in risk to the public health and safety. Those requirements deleted from the Technical Specifications would be transferred to other documents under control of the licensee with oversight by the NRC. However, much work remains to be done by both the industry and the NRC before new Technical Specifications can be implemented for individual plants. We expect this to be a multi-year program.

In addition to the longer term program to completely rewrite the Technical Specifications, we have initiated, in cooperation with the industry, an effort to make a number of shorter term improvements. As a part of this effort, all of the reactor owners groups have already, or soon will, submit proposals to relax testing requirements and equipment allowed outage times. The Westinghouse Owners Group proposal was approved in 1985 and we anticipate that others will be approved this year. The staff is also working on proposals to remove Fire Protection and other system detailed equipment lists and requirements from Technical Specifications. Some of these changes have already been made for plants currently in the licensing process and we anticipate approving them for previously licensed plants in the next several months. The NRC staff is working to prioritize these short term proposals so that the available industry and NRC resources can be used most effectively.

With regard to the question of whether this program is to be voluntary, all of the short term improvements either approved or under consideration to date have been voluntary. The question of whether the implementation of the new Technical Specifications would be voluntary is still under consideration by the Commission.

MR. BEVILL: In what ways is the NRC working together with the private sector to promote public safety?

CHAIRMAN PALLADINO: NRC has initiated efforts over the years to work with private sector associations and members of the public to review safety issues, emerging technological developments and other regulatory matters.

For example, as a result of the insights gained from the Davis Besse and Rancho Seco events, NRC has asked the Babcock and Wilcox (B&W) Owners' Group to reassess the basic design requirements and operational characteristics of B&W nuclear reactors. NRC staff will be reviewing and actively participating in the review.

Also, the loss of power and water hammer event at San Onofre Unit 1 raised questions regarding the design, testing and maintenance of safety-related check valves. In addition to NRC review of the check valve issue, NRC has requested the four Nuclear Steam Supply System Owners' Groups to review the check valve issue, to take prompt action as appropriate, and to meet with the NRC staff to discuss the Owners' Groups views and intended actions.

The NRC has also signed a Memorandum of Understanding with the Institute of Nuclear Power Operations (INPO) for the exchange of experience, information and data related to the safety of nuclear power plants. This relationship with INPO facilitates improved communication and a working together of NRC with the private sector nuclear industry.

MR. BEVILL: Please describe the Integrated Safety Assessment Program (ISAP) including the successes of the program.

CHAIRMAN PALLADINO: As described in the Commission's policy statement on the Systematic Safety Evaluation of Operating Nuclear Power Reactors (49 FR 45112), an ISAP pilot effort is being undertaken to examine the effectiveness of regulatory policies and practices by which all pending and potential safety issues for a given operating nuclear power reactor could be evaluated in an integrated assessment to establish a comprehensive implementation schedule for plant improvements.

The pilot program was initiated in May 1985 with two volunteered operating plants, Millstone Unit 1 and Haddam Neck. The Commission intends to judge the successes when the results of the pilot program become available near the end of FY 1986.

MR. BEVILL: Why is this [ISAP] program not funded in FY 1987?

CHAIRMAN PALLADINO: Because of constrained resource levels, the Commission did not fund ISAP for FY 1987. For planning purposes, the Commission has budgeted four professional years to incorporate the ISAP concept into the day-to-day activities for operating reactors.

However, the Commission also intends to review the ISAP experience following the completion of the pilot program and may wish to pursue other resource allocation alternatives.

MR. BEVILL: What is the status of the pilot ISAP program and what have been the advantages and disadvantages of the pilot program?

CHAIRMAN PALLADINO: The ISAP pilot program was initiated in May 1985. In a letter dated July 31, 1985, the NRC staff concluded the screening review of potential safety issues which identified 70 "topics" for Millstone Unit 1 and 80 "topics" for Haddam Neck.

The review of these two plants is being conducted sequentially. The licensee has submitted a plant-specific probabilistic safety analysis and detailed safety analyses for each of the topics for Millstone Unit 1. The NRC staff has completed and issued an operating experience study and an evaluation of the topic analyses and other potential safety issues. As a result, the integrated assessment for Millstone Unit 1 is currently being conducted and a draft report, for peer review, should be completed in April 1986.

Similar studies and analyses for Haddam Neck will be completed during the spring and summer of 1986.

The Commission intends to review a detailed analysis of the advantages and disadvantages of ISAP upon completion of the pilot program in the fall of 1986. There is insufficient experience at this time for the Commission to speculate on the advantages and disadvantages of ISAP as it is currently being conducted.

MR. BEVILL: When is the pilot program scheduled for completion and is this schedule changed from last year?

CHAIRMAN PALLADINO: The ISAP two-plant pilot program is scheduled to be completed in FY 1986. Last year, the Commission indicated that we may want to continue this effort in FY 1986 and subsequently decided to do so.

MR. BEVILL: Please describe the efforts of Nuclear Utility Management and Human Resources Committee (NUMARC) and how the NRC coordinates with this effort.

CHAIRMAN PALLADINO: For the past few years, the NRC has actively sought ways to develop alternate regulatory concepts which recognize the contribution of industry programs to the extent that such programs are effective and consistent with NRC regulatory responsibilities. The establishment of the Nuclear Utility Management and Human Resources Committee (NUMARC) in 1984 has been a positive step toward meeting that goal. At that time, industry representatives met with the Commission and asked that NRC delay rulemaking in several areas to allow time for the industry to study these issues and to develop industry positions on these matters.

The mission of NUMARC is to conduct an integrated review of management and other selected issues related to nuclear power plant operation. NUMARC defines and prioritizes these issues and develops proposed industry resolutions for these issues with recognition of NRC regulatory needs so that the industry initiatives and NRC activities complement each other in ensuring high levels of safety and reliability in nuclear plant operation. NUMARC takes steps to ensure industry support, dissemination, understanding, and implementation of resulting industry plans.

NUMARC functions under the auspices of the Utility Nuclear Power Oversight Committee (UNPOC) utilizing a three-tier organization: Executive Group, Steering Committee, and Working Group. The Executive Group consists of a senior executive from each U.S. nuclear utility. These executives are involved on a day-to-day basis in nuclear matters. Members of the Executive Group make commitments on behalf of their utility to support industry positions on NUMARC issues. The Steering Committee's function is to organize and coordinate NUMARC activities, including management and interactions with other industry organizations and governmental agencies such as the NRC. Industry organizations such as the Atomic Industrial Forum (AIF), Edison Electric Institute (EEI) and the Institute of Nuclear Power Operations (INPO) are normally invited to attend Steering Committee meetings. The overall Working Group serves as a pool of qualified senior nuclear managers from which the Steering Committee can draw people to develop and refine industry positions on selected issues. Each specific working group normally consists of at least seven members drawn from the overall Working Group. Draft positions developed by the working groups are reviewed and approved by the Steering Committee for presentation to the Executive Group. If a preponderance of the Executive Group members (80 percent or more) endorses the draft position, it becomes an industry-wide position.

Some of the principal issues involving NUMARC include: fitness for duty, access authorization, operator requalification, plant maintenance, station blackout, shutdown decay heat removal systems, safety goals/cost benefit, emergency planning, source term, severe accident policy, systems interaction, quality assurance and standardization.

In order to coordinate these activities, NUMARC briefs the Commission on the status of its activities on a periodic basis. The principal point of contact between the NRC and NUMARC is through the NRC's Executive Director for Operations and the Chairman of the NUMARC Steering Committee. In addition, coordination meetings are held as necessary between NRC staff members and members of the NUMARC working groups.

ACRS, APPEAL AND LICENSING BOARD PANELS

MR. BEVILL: Last year the Commission indicated that a study was underway to review the contribution of the Advisory Committee on Reactor Safeguards (ACRS). Has the Commission any plans for reducing or modifying the role of the ACRS in the future?

CHAIRMAN PALLADINO: The report, Panel on ACRS Effectiveness, Analysis and Recommendations Concerning the Scope, Methods, Management and Effectiveness of the Advisory Committee on Reactor Safeguards, was issued in September 1985. The ACRS has not yet formally responded to the Commission. However, the following actions have been taken. The various ACRS subcommittees, which are the principal tool of technical review used by the ACRS, have been reorganized to reflect the different priorities occasioned by the impending completion of licensing of new reactors. Subcommittees on individual reactors will be dissolved after the plant is operating and, within the budget constraints imposed by the Commission, a greater emphasis will be placed on radioactive waste disposal and on the general oversight of operating reactors. In order to provide greater continuity in committee management the term of the Chairman has been increased on a trial basis from one year to two and an ACRS management committee has been established.

The Commission has decreased the FTE ceiling of the ACRS from 54 to 42 over the last three years. This ceiling includes Committee members, consultants, fellows, professional staff support and clerical support. The Commission has directed the ACRS to reorder its priorities as necessary to support the nuclear waste disposal effort while continuing to provide technical advice, on request, on reactor safety. The Commission notes that, of the 104 subcommittee meetings last year, less than ten percent concerned licensing of new reactors. The rest involved reactor operations, waste management, and specific safety issues.

The ACRS is a statutory advisory committee and its role derives basically from the Atomic Energy Act of 1954, as amended.

MR. BEVILL: Please provide the membership and funding for the NRC Advisory Committee on Reactor Safeguards.

CHAIRMAN PALLADINO: I will provide that information for the record.

(The information to be furnished follows:)

Advisory Committee on Reactor Safeguards

CHAIRMAN: Mr. David A. Ward, Research Manager, Reactor Safety Research, E. I. du Pont de Nemours & Company, Savannah River Laboratory, Aiken, South Carolina

VICE CHAIRMAN: Dr. Harold W. Lewis, Professor of Physics, Department of Physics, University of California, Santa Barbara, California

Dr. Max W. Carbon, Professor and Chairman of Nuclear Engineering Department, University of Wisconsin, Madison, Wisconsin

Mr. Jesse C. Ebersole, retired Head Nuclear Engineer, Division of Engineering Design, Tennessee Valley Authority, Knoxville, Tennessee

Dr. William Kerr, Professor of Nuclear Engineering and Director of the Office of Energy Research, University of Michigan, Ann Arbor, Michigan

Dr. Carson Mark, retired Division Leader, Los Alamos Scientific Laboratory, Los Alamos, New Mexico

Mr. Caryle Michelson, retired Principal Nuclear Engineer, Tennessee Valley Authority, Knoxville, Tennessee and retired Director, Office for Analysis and Evaluation of Operational Data, U. S. Nuclear Regulatory Commission, Washington, D. C.

Dr. Dade W. Moeller, Professor of Engineering in Environmental Health and Associate Dean for Continuing Education, School of Public Health, Harvard University, Boston, Massachusetts

Dr. David Okrent, Professor of Engineering and Applied Science, Department of Mechanical, Aerospace and Nuclear Engineering, School of Engineering and Applied Science, University of California, Los Angeles, California

Mr. Glenn A. Reed, retired Plant Manager, Pt. Beach Nuclear Power Plant, Wisconsin Electric Power Company, Two Rivers, Wisconsin

Dr. Forrest J. Remick, Associate Vice President for Research and Professor of Nuclear Engineering, The Pennsylvania State University, University Park, Pennsylvania

Dr. Paul G. Shewmon, Professor of Metallurgical Engineering Department, Ohio State University, Columbus, Ohio

Dr. Chester P. Siess, Professor Emeritus of Civil Engineering, University of Illinois, Urbana, Illinois

Mr. Charles J. Wylie, retired Chief Engineer, Electrical Division, Duke Power Company, Charlotte, North Carolina

As reported in the NRC's Annual Report on Advisory Committees required by the Federal Advisory Committee Act, the actual funding of the ACRS for FY 1985 and the estimated funding requirements for FY 1986 are:

	FY 1985	FY 1986 Est.
Compensation	2.0 million	2.0 million
Travel And Per Diem	300,000	285,000
Other (rents, user charges, graphics, printing, mailing, etc.)	370,000	370,000

Current estimates of the funds for ACRS' operations in FY 1987 include:

Compensation	2.2 million*
Travel and per diem	260,000

*This represents an actual 15 percent reduction in permanent staff available to the Committee.

MR. BEVILL: Please describe the workload for the ACRS for the last several years and the predictions for the future.

CHAIRMAN PALLADINO: The Advisory Committee on Reactor Safeguards (ACRS), established by statute in 1957, provides advice to the Commission on potential hazards of proposed or existing reactor facilities and the adequacy of proposed safety standards. The Atomic Energy Act of 1954 also requires that the ACRS advise the Commission, as requested, with respect to the safety of operating reactors and perform such other duties as the Commission may request. Consistent with the Energy Reorganization Act of 1974, the Committee will review any matter related to the safety of nuclear facilities specifically requested by the Department of Energy (DOE). Also, in accordance with Public Law 95-209, the ACRS is required to prepare an annual report to the U.S. Congress on the NRC Safety Research Program.

During fiscal year 1985, the Committee completed its annual report to Congress on the NRC Safety Research Program for fiscal years 1986 and 1987, and its annual report to the Commission on the Safety Research Program and Budget for fiscal year 1987. The Committee also provided nineteen special topical reports to the NRC, individual Commissioners and others on a variety of issues.

The Committee's activities during FY 1985 reflected the continuing license activity within the Commission and included six reports on requests for nuclear power plant operating licenses and one review of an operating plant evaluated as part of the NRC's systematic evaluation program.

In addition to its reports on licensed reactors and operating license applications, the Committee provided advice to NRC on proposed rules, criteria, or regulatory guides.

The Committee commented in three reports on the NRC Staff's proposed priority rankings for newly identified generic issues.

The Committee also prepared four reports on events of particular interest at operating reactors and three reports dealing with various aspects of the NRC's civilian radwaste program.

In accordance with the procedures embodied in NRC Manual Chapter 4125, the Committee reviewed a Differing Professional Opinion (i.e., a formal technical disagreement among NRC Staff members) concerning the proposed final rule on pressurized thermal shock.

In performing the reviews and preparing the reports cited above, the ACRS held 12 full committee meetings and 104 subcommittee meetings. Members of the Committee also participated in several conferences and visits to exchange safety-related information with foreign groups engaged in nuclear regulatory and development activities.

Similarly, the ACRS held 87 subcommittee and 12 full committee meetings in FY 1984 and 94 subcommittee and 12 full committee meetings in FY 1983.

With respect to future activities of the ACRS, the rate at which meetings have been held through the first half of FY 1986 would result in a total of 88 subcommittee and 12 full committee meetings by the end of this year. Constraints on personnel and fiscal resources which have been imposed for FY 1987, and thereafter, may result in a reduction of 20 percent in the activities of the Committee; this is expected to be accompanied by a significant increase in ACRS attention to the NRC's high-level waste program, as requested in my memorandum to ACRS Chairman Ward, dated November 22, 1985.

Since the fiscal and personnel resources available to the Committee will be reduced in FY 1987, there will have to be a commensurate reduction in ACRS consideration of NRC and industry programs.

Complete lists of ACRS reports for FY 1983 through FY 1985 and FY 1986 to date have been provided to the Subcommittee.

MR. BEVILL: Please provide the membership and funding for the Atomic Safety and Licensing Appeal Panel.

CHAIRMAN PALLADINO: At present, the Appeal Panel has six full-time members (four legal and two technical) and one part-time member (technical). In addition, it has a supporting staff totaling three in number (a counsel, a technical advisor and a law clerk). It is anticipated that, due to a diminishing caseload, the number of Panel members and supporting staff will decrease over the next year. The FY 86 program support allocation for the Panel is $10,000.

MR. BEVILL: Please describe the workload for the Atomic Safety and Licensing Appeal Panel for the last three years and the forecast for the next three years.

CHAIRMAN PALLADINO: In FY 1983, the appeal boards had an average of 15 separate proceedings pending before them at any given time. These proceedings resulted in 47 decisions that were of sufficient significance to be published in the NRC's official reports. One proceeding in particular, that involving the restart of Unit 1 of the Three Mile Island facility, required extensive time and effort of Appeal Panel personnel. This proceeding alone generated 10 published decisions. In addition to the published decisions, the appeal boards issued over 200 memoranda and orders. At the start of the year there were eight full-time and two part-time panel members and four professional staff members (a counsel, two law clerks and a technical advisor). In June 1983, a full-time member resigned, followed by the resignation of a part-time member the following month. Neither member was replaced.

The average number of cases pending before the appeal boards in FY 1984 was 12, resulting in 41 published decisions and over 175 unpublished memoranda and orders. Among these proceedings, three were particularly noteworthy -- TMI-1 Restart, Shoreham and Diablo Canyon. These three alone generated 12 published decisions. During the year, the Vice-Chairman of the Panel retired, leaving six full-time members and one part-time member at the end of the year. The number of law clerk positions was reduced to one. Thus only three professional staff members remained to serve the Panel.

For FY 1985, the average number of pending cases was nine. The appeal boards published 31 decisions and issued over 180 unpublished memoranda and orders. During this period, the TMI-1 Restart and Shoreham proceedings continued to occupy considerable attention of the appeal boards. There were six full-time panel members, one part-time panel member, and three professional staff members.

At present, there are six cases before appeal boards. Over the course of the next several months, the appeal boards should be called upon to undertake appellate reviews in a number of additional cases. Among them will likely be the Braidwood, Comanche Peak, Seabrook and South Texas operating license proceedings. Through FY 87, it appears probable that the appeal boards will have an average of eight pending proceedings at any given time. It is currently difficult to make an informed forecast as to caseload beyond that time.

MR. BEVILL: It is understood that the NRC asked the ASLB to review the June 9, 1985 incident at Davis-Besse. How many reviews of the Davis-Besse incident have been performed to date?

CHAIRMAN PALLADINO: First, there is no ASLB review of Davis-Besse incident underway or contemplated. The Commission has formed an ad hoc independent review group to examine the implications of the Davis-Besse incident, but it is not an ASLB function. We note that as a matter of administrative convenience even though the group will not conduct an adjudicatory proceeding, staff support is being provided by the ASLB staff. Further, two of the five members are ASLB judges. Those two individuals were chosen because of their personal experience not because they were judges. The Chairman of the group is a judge with broad experience in managing complex fact-findings; the other judge has a broad technical background as well as many years of experience as a senior regulatory manager. It should be noted that the major objective of the ad hoc group is generic in nature, i.e. to determine how the NRC might improve its process such that significant issues do not remain outstanding for extended periods of time at all operating plants.

Immediately after the incident an independent investigation team was formed to determine exactly what happened at Davis-Besse and to identify the root causes of the incident. In parallel, the licensee undertook its own investigation of the incident.

Based on the results of these two investigations, the staff determined what plant specific actions would be necessary to allow restart and began to examine the implications of the incident and its causitive factors on possible changes in internal staff practice. Beyond this, INPO undertook a general review of Toledo Edison management and operation. Other than the ad hoc group, these are the only review efforts of which we are aware.

MR. BEVILL: What new and independent information does the NRC expect from the ASLB review?

CHAIRMAN PALLADINO: The Commission established an independent *ad hoc* review group to review issues arising out of the June 9, 1985 incident at Davis-Besse, to identify additional lessons that might be learned from the incident and to recommend how NRC's internal procedures and its oversight of reactor licensees may be improved. To this end the review group will undertake several studies.

It will examine the process of analysis, review and interaction between the licensee and the NRC that took place preceding the event concerning the reliability of, and the need and schedule for modification of, the Davis-Besse auxiliary feedwater system and associated systems; and make recommendations as to how the regulatory process may be improved in light of the findings resulting from this examination.

It will examine pre-event probabilistic assessments of the reliability of the Davis-Besse plant safety systems, the NRC review of these assessments, and the use to which these analyses were put in the regulatory decisionmaking process; and make recommendations as to how the use of this sort of reliability analysis in the regulatory process might be improved.

It will examine the licensee's management, operation and maintenance programs to the extent that they may have contributed to the equipment failures that caused or exacerbated the incident; examine the NRC's requirements for, and oversight of, such licensee programs; and make recommendations as to how the NRC may improve its regulatory processes and its oversight of reactor licensees in these areas.

Finally, it will examine the mandate, capabilities of members, operation, and results of the Davis-Besse incident investigation team, and the use to which its report was put by the regulatory staff; and make recommendations as to how the incident investigation process may be improved.

STANDARDIZATION

MR. BEVILL: What is the NRC doing administratively to facilitate standardization of plants in the next generation of reactors.

CHAIRMAN PALLADINO: The Commission is in substantial agreement on a new policy statement encouraging standardization and encouraging design certification through rulemaking. Guidance to this effect will be sent to staff within the next few weeks to develop a document detailing the implementation issues from a regulatory perspective.

MR. BEVILL: Please describe the status of the NRC legislation on standardization.

CHAIRMAN PALLADINO: In early 1985 the NRC submitted proposed licensing reform legislation to Congress which contained several provisions relating to standardization. The NRC proposed legislation has been introduced as S. 836 in the Senate and H.R. 1447 in the House. The Commission strongly supports enactment of this legislation. On July 11, 1985 the Subcommittee on Nuclear Regulation of the Senate Committee on Environment and Public Works held hearings on licensing reform. The Subcommittee on Energy Conservation and Power of the House Committee on Energy and

Commerce held hearings on this subject on December 10, 1985. No markup sessions have been held.

The Commission is presently deliberating with regard to its Standardization Policy Statement. This statement, in its present form, is consistent with the legislation proposed in 1985. Therefore, changes to the legislation are not envisioned.

MR. BEVILL: Does the NRC plan to take a visible and assertive position in informing Members of Congress about the benefits of legislation to standardize the future generations of nuclear power plants?

CHAIRMAN PALLADINO: As you are aware, the Commission has proposed draft legislation on standardization. Beyond that, members of the Commission have argued forcefully before Committees of Congress and industry groups on the need for standardization. The Commission believes that standardization is a necessary pre-condition for revitalization of the nuclear industry.

RESEARCH

MR. BEVILL: The NRC research program funding remains relatively high. While DOE's LWR research program has been reduced and industry appears to be more interested in research on advanced reactor designs, the NRC continues researching LWRs. Please explain.

CHAIRMAN PALLADINO: The reductions in the DOE LWR research program have been primarily in response to large budget cuts rather than to an identified diminuation of need. The reductions in research made necessary by budget cuts have included substantial reductions in safety-related research as well as in more advanced LWR designs. Therefore, it has become even more important for the NRC to maintain a program that assures that critical needs for safety-related research will be met. The NRC research program funding itself has also been cut substantially in recent years, from a high of $209 million in 1981, to $109 million in FY 1986. In making program adjustments, the NRC has focussed the available funding on the areas of immediate and near-term regulatory concerns.

For example, the NRC regulates the inspection and repair of steam generators and needs research to provide a sound basis for regulation since deterioration has been observed after only 1-2 years of operation. The NRC regulates the in-service inspection of BWR piping, as well as repair techniques or substitute materials. Research is needed to provide competent regulation.

Embrittlement of reactor pressure vessels and pressurized thermal shock (PTS) have become more of a concern. The NRC regulates the allowable properties of these vessels, and needs research to regulate in an informed manner.

With plant life extension, additional research is required to determine what is necessary in order to extend plant operating life to 50-60 years. Data at present are insufficient to permit indiscriminate life extension. The industry bears the main burden here; our research will assist us in asking the right questions, and writing credible regulations.

Incidents occurring in operating reactors, as well as projections based on analytical models, have clearly identified that these are continuing regulatory concerns for current LWR technology that must be addressed. These examples serve to illustrate that the power reactor industry is still maturing. As new problems arise, we must deal with them.

The NRC emphasis on continuing LWR safety research is further corroborated by the industry, which continues to maintain a substantial program of nuclear safety research. For FY 1986 the Electric Power Research Institute (EPRI) has budgeted $49.7 million for nuclear safety research and expects to spend approximately $52 million for this type of research in FY 1987. Additionally, while current information is not available on expenditures for the rest of the private sector, in FY 1983 the private sector was estimated to spend about $40-60 million/year on LWR safety-related R&D.

MR. BEVILL: Is it appropriate to spend such a large portion of NRC's budget on technical research for reactors which are operating today? If so, please break down exactly how that money is to be spent, what research programs support which unanswered safety concern, and when these programs will come to a natural end.

CHAIRMAN PALLADINO: Yes, it is appropriate that a significant portion of NRC's budget is directed at problems of operating reactors. The experience of the last few years does not support a presumption that all of the problems of nuclear power plant safety are resolved. In recent years, a number of new safety problems have arisen or been identified, and there is general national and international agreement that research is needed and will continue to be needed in the broad areas of plant aging, operational and thermal transients, severe accidents, plant operations and risk assessment, and seismic design analysis. I will summarize each briefly and provide a breakdown of the budget for each area for the record with your permission.

Corrosion, radiation embrittlement, and fatigue have raised specific questions about the continued safety and viability of many operating reactors; in particular, concerns with the integrity of the primary coolant pressure boundary, cracked piping, defective valves and relays have been raised.

Anomalous plant transients which have occurred have had serious safety implications for a broad class of reactors. Since reactors are not standardized, direct extrapolation of the safety significance of a given accident is not readily achievable.

Implementation of the Commission's policy on severe reactor accidents requires a thorough understanding of the physical and chemical processes which take place during such accidents and on their potential impacts on public health and safety. Information is being developed to provide the technical basis needed to revise current regulatory requirements and to assess the need to backfit additional safety features on operating plants.

Understanding the risk reduction potential of various existing and proposed regulatory requirements and the risk represented by specific reactor conditions is required to establish the limiting conditions for reactor operation.

Finally, there is a need for improved bases and methods for properly characterizing seismic hazard and seismic margins for nuclear power plants in the eastern United States.

The NRC research program is focussed on these high priority safety issues and is carefully structured to focus only on those technical areas where an independent NRC capability is necessary in order for NRC to perform its required functions of protecting public health and safety. Recent examples where research made it possible to make prompt technical decisions are in the areas of reactor vessel brittle fracture and cracking in large pipes.

(The distribution of research funds is provided for the record.)

NRC RESEARCH FUNDS BY MAJOR AREA

	(DOLLARS IN MILLIONS)		
	FY 85	FY 86	FY 87
AGING AND DEGRADATION OF OPERATING NPPS	$ 31.4	$ 29.8	$ 29.7
OPERATIONAL & THERMAL HYDRAULIC TRANSIENTS	24.0	21.5	16.4
SEVERE ACCIDENTS & THEIR REGULATORY IMPLICATIONS	40.0	29.9	19.0
PLANT OPERATIONS AND RISK ASSESSMENT	16.6	15.2	11.8
SEISMIC DESIGN ANALYSIS	12.1	14.6	15.4
TOTAL	$124.1	$111.0	$ 92.3

MR. BEVILL: How does the NRC assure itself that its research activities are not duplicating research performed by DOE?

CHAIRMAN PALLADINO: The NRC maintains close communication with the DOE to assure that our programs are not duplicative. This communication occurs in the form of coordinating meetings and exchange of program information on areas of joint interest. Specifically, there is a DOE-NRC coordinating committee that meets regularly during the year and research topics are among those discussed at the meetings. Also, DOE and NRC both have staff whose duties involve coordination of research. Every year NRC conducts a Water Reactor Safety Research Information Meeting in which all NRC and some DOE research results are presented. The NRC annually develops and disseminates a Long Range Research Plan to express what research is being undertaken and how it is to be used. Finally, the NRC makes substantial use of the DOE national laboratories in fulfilling its research needs, and the laboratory management plays a role in the ongoing exchange of information between the DOE and NRC on research programs.

DOE and NRC do conduct some research that is complementary. Two areas in which the NRC and DOE have successfully conducted complementary research are the analysis of fission product test data from the LOFT program and the EPRI-sponsored TREET program. While the parties participating had different research objectives, these coordinated research programs, in which the NRC participated as a non-paying member, were able to satisfy the needs of all participants.

MR. BEVILL: What have been the most significant findings of the NRC research program in the past year? To what extent have they been used in establishing or revising regulatory requirements?

CHAIRMAN PALLADINO: The most significant findings of the NRC research program in the past year are cited in the NRC Annual Report. With your permission, I will submit for the record a list of regulations using these NRC research findings in their development.

(The information to be provided follows:)

REGULATIONS USING NRC RESEARCH

- TWO REVISIONS OF 10 CFR 50.44 REQUIRING HYDROGEN CONTROL FOR TWO CLASSES OF LWRS WERE ISSUED BASED ON RES ASSESSMENTS OF THE POTENTIAL CONSEQUENCES OF HYDROGEN IGNITION DURING POSTULATED SEVERE REACTOR INCIDENTS. THE NRC RESEARCH EXPERIMENTS ON HYDROGEN IGNITION AND BURN ENVIRONMENT IDENTIFIED THE POTENTIAL FOR SIGNIFICANT TEMPERATURES WHICH COULD THREATEN EQUIPMENT SURVIVAL IN SMALL CONTAINMENTS SUCH AS THE ICE CONDENSER PWR AND BWR MARK III. THIS RESULTED IN THE INCLUSION OF THIS CONSIDERATION IN 10 CFR 50.44. ALSO, SUBSEQUENT EXPERIMENTS ESTABLISHED THAT LOCATING IGNITORS IN CONTAINMENT WOULD PROVIDE A COST EFFECTIVE WAY OF LIMITING THE HYDROGEN BUILDUP IN CONTAINMENT FROM AN ACCIDENT AND ASSURE EQUIPMENT SURVIVAL. AS A RESULT NRC REQUIRED THAT LICENSEES INSTALL A HYDROGEN GAS CONTROL SYSTEM.

- A MAJOR REVISION OF 10 CFR 20 WAS ISSUED AS A PROPOSED RULE. THIS UPDATE WILL IMPOSE REQUIREMENTS FOR RADIATION PROTECTION IN SOME AREAS, SUCH AS: (A) FOR CERTAIN RADIONUCLIDES, THE INTAKE LIMITS ARE BEING LOWERED; (B) THE MAXIMUM WHOLE BODY DOSE IS REDUCED FROM 12 REMS TO 5 REMS; (C) PART 20 WILL ESTABLISH, FOR THE FIRST TIME, A LIMIT OF .5 REMS FOR THE EMBRYO/FETUS; AND (D) THE DOSE LIMIT FOR THE EXTREMITIES WILL BE REDUCED FROM 75 REMS DOWN TO 50 REMS.

- THERMAL HYDRAULIC SAFETY ANALYSES AS PART OF ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) RESEARCH REVEALED THAT OVERPRESSURE TRANSIENTS IN BOILING WATER REACTORS CAN RESULT IN COLLAPSE OF VOIDS IN THE CORE WITH AN ACCOMPANYING RAPID INCREASE IN REACTIVITY. LICENSEES WERE REQUIRED TO INSTALL AUTOMATIC PUMP TRIPS UPON OVERPRESSURE FOR ALL BWRS.

- MULTIFUEL-ROD BURST RESEARCH REVEALED THAT LICENSEE ANALYTICAL MODELS USED TO DETERMINE CONFORMANCE TO NRC'S EMERGENCY CORE COOLING REGULATORY REQUIREMENTS (APPENDIX K) WERE INCOPRECT IN THREE AREAS: (A) RUPTURED RODS REDUCE FLOW AREA, (B) STRAINED CLAD HAS ENLARGED AREA FOR OXIDATION, AND (C) TIME OF RUPTURE WAS MISUNDERSTOOD. VENDORS HAD TO REVISE THEIR MODELS RESULTING IN SOME FUEL OPERATING LIMIT STRINGENCIES.

- PRESSURIZED THERMAL SHOCK RESEARCH INVOLVING MATERIALS, THERMAL-HYDRUALIC AND RISK ANALYSES OF REACTOR PRESSURE VESSEL OVERCOOLING TRANSIENTS RESULTED IN VESSEL COOL DOWN LIMITS BEING IMPOSED ON LICENSEE POWER PLANTS.

- NRC RESEARCH SUPPORTED THE DEVELOPMENT OF TECHNICAL CRITERIA FOR 10 CFR PART 60, ON DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGICAL REPOSITORIES. APPROPRIATE REQUIREMENTS WERE ESTABLISHED FOR WASTE CONTAINMENT, CONTROL OF RELEASE AND MULTIPLE BARRIER DESIGNS.

- Research in nondestructive examination (NDE) for stainless steel piping provided the technical basis for issuance of Bulletin 83-02.

- 10 CFR 50.49, which deals with environmental qualification of electrical equipment important to safety contains requirements for consideration of radiation dose rate effects and synergistic effects. These requirements flow directly from NRC-sponsored research on qualification testing procedures.

- NRC research on in-service inspection (ISI) has resulted in inspection requirements through modification of the ASME Boiler and Pressure Vessel Code.

- Steam generator research that will be completed in late 1986 is expected to provide the basis for inspection and tube plugging criteria which will be implemented in revisions to Regulatory Guides 1.83 and 1.121.

- Appendix R to 10 CFR Part 50 specified fire protection requirements for existing LWR plants that, in some cases, went beyond then current practice including requirements for separation of cables and equipment of redundant trains by horizontal distance of more than 20 ft. Additional cable fire screening criteria were imposed by Reg. Guide 1.131 on qualification tests of electric cables for LWR reactors.

- Piping research programs have resulted in requirements for acceptance of flaws in stainless steel pipes. This has been implemented by inclusion in the ASME Code (Section XI, IWB-3640) and will be incorporated by endorsement in 10 CFR 50.55(a).

- Research on pressurized thermal shock (PTS) resulted in increased requirements for actions by plant operators to prevent PTS, including conducting additional analyses to evaluate the adequacy of equipment qualification programs and the ability of PWRs to withstand PTS events.

- Reg. Guide 1.97 dealing with instrumentation needed during and following an accident identified the need for such instrumentation to be qualified for conditions that might be encountered in severe accidents.

- RES developed a special computer code (FRANTIC) for the evaluation of plant technical specifications. This code is used routinely by both industry and the NRC licensing staff in dealing with modifications to plant technical specifications, without the issuance of formal regulatory guides.

- RES-sponsored PRA studies have identified a number of important vulnerabilities in certain operating reactors. For example, the addition of an auxiliary feedwater train to the

CALVERT CLIFFS PLANT AND MODIFICATIONS TO LOAD-SHEDDING SWITCHES AT MILLSTONE (A SINGLE-FAILURE EVENT WHICH COULD HAVE DISABLED THE EMERGENCY CORE COOLING SYSTEM AT THAT PLANT).

- IN ALMOST EVERY PRA SPONSORED BY RES, THERE HAS BEEN SOME FOLLOW-UP MODIFICATION MADE BY THE AFFECTED UTILITY, GENERALLY ON ITS OWN INITIATIVE, EITHER TO THE ENGINEERED PLANT SAFETY SYSTEMS OR TO PLANT OPERATING PROCEDURES IN ORDER TO PROVIDE MORE RELIABLE SAFETY SYSTEMS.

- NRC-FUNDED RADIOBIOLOGICAL RESEARCH HAS RESULTED IN RECOMMENDATIONS TO LOWER THE INTAKE LIMIT FOR AIRBORNE URANIUM IN SOLUBLE FORM BY A FACTOR OF 5.

- THROUGH AN NRC-FUNDED EFFORT, AN ACCREDITATION PROGRAM WAS ESTABLISHED AT NBS FOR PERSONNEL DOSIMETRY PROCESSORS. RESEARCH REVEALED WIDESPREAD POOR PERFORMANCE AND LED TO THE DEVELOPMENT OF A PROVEN PERFORMANCE STANDARD. THROUGH THIS PROGRAM, PROCESSOR PERFORMANCE HAS DRAMATICALLY IMPROVED; THE TEST FAILURE RATE WAS REDUCED FROM 52 PERCENT TO 7 PERCENT.

- NRC RESEARCH FUNDS WERE USED TO DETERMINE REGULATORY CONSTRAINTS WHICH ARE APPLIED IN THE DESIGN, TESTING AND USE OF RESPIRATORY PROTECTION EQUIPMENT FOR AIRBORNE RADIOIODINES.

MR. BEVILL: What is the status of the effort to create a technical integration center for thermal hydraulics in Idaho?

CHAIRMAN PALLADINO: The Thermal-Hydraulic Technical Integration Center (TIC) was initiated at the Idaho National Engineering Laboratory (INEL) in February 1986. As an initial prototypical test case, a study was initiated, under an existing accident analysis program, on methods for analyzing the safety of B&W plants.

The initial tasks will include setting up a TIC management structure, providing for code applicability and scaling documents on B&W geometrics, and improving methods for analyzing B&W reactors.

MR. BEVILL: How much is budgeted for this effort?

CHAIRMAN PALLADINO: Approximately $900K has already been identified for this work. An additional $800K is proposed for FY 1986. The FY 1987 budget for TIC has not yet been identified; but it is expected to be higher than for FY 1986. These amounts are in addition to the other thermal-hydraulic work at INEL.

MR. BEVILL: What is the status of the TMI-2 cleanup? Will sufficient funds be available to finish the job?

CHAIRMAN PALLADINO: Defueling operations to remove the damaged reactor core commenced on October 31, 1985. Specially designed equipment and procedures are being employed in these unique operations. Defueling operators working on a shielded platform over the reactor vessel, are currently using long-handled tools to load core debris into defueling canisters. To date, twenty-five filled canisters containing approximately 26,500 pounds of debris have been transferred from the reactor vessel to submerged storage racks in spent fuel pool "A" in the fuel handling building. Approximately 281,500 pounds of debris remain to be removed. Off-site shipment of loaded canisters to a Department of Energy facility at the Idaho National Engineering Laboratory is scheduled to commence in the second quarter of Calendar Year (CY) 1986. Decontamination and dose reduction activities are continuing in conjunction with the defueling program. Radiation surveys of the reactor building basement have been performed using robotic vehicles, which may also be used to decontaminate this highly radioactive area. Surveys are in progress to locate and quantify fuel that may have been transported to areas of the primary system outside the reactor vessel. To date, little fuel debris has been found outside the vessel. Steam Generator A has been opened and none has been found there.

Currently, the licensee is investigating methods to curb the growth of micro-organisms in the reactor coolant system. The presence of these micro-organisms has reduced visibility in the vessel, consequently affecting defueling operations.

The remaining major cleanup milestones and the licensee's estimated schedule are as follows:

Completion of all in-vessel and ex-vessel defueling by June 1987, completion of off-site shipment of fuel by April 1988, completion of systems decontamination by July 1988, and Program endpoint by September 1988.

The Commission must ultimately approve the method of disposal of the processed accident-generated water used and stored at TMI-2 and must also approve the licensee's proposed endpoint for the cleanup. The staff anticipates receiving the licensee's proposals on both of of these issues sometime during 1986.

The licensee's most recent cost estimate (September 23, 1985) puts the total cleanup cost at $965M. The licensee has expended a total of $615M prior to CY 86. This leaves a total of $350M needed in CY86 and beyond to complete the cleanup. The staff's review of the licensee's most recent cleanup funding plan has concluded that sufficient funds will be available for the completion of all major cleanup goals. However, there is a long-term funding question. A reduction in DOE funding for TMI may have the cascade effect of other research participants likewise withdrawing their support.

MR. BEVILL: Has the DOE research related to the TMI-2 accident been useful to the NRC?

CHAIRMAN PALLADINO: DOE has provided the NRC staff numerous opportunities in the last several years to participate in the development of the TMI-2 examination plans and objectives and the review of interim results. This has allowed effective use of skills and experience developed for the Power Burst Facility (PBF) and Loss of Fluid Test (LOFT) experimental programs at Idaho. The results of this experience have considerably enhanced NRC's ability to characterize severe accident core damage. Since the accident has been shown in the last year or so to have progressed into the lower regions of the reactor vessel, the information obtainable from the damaged TMI-2 core components and the widespread debris relocation could not possibly be duplicated even in large scale tests of accident situations.

MR. BEVILL: What would be the effect of a reduction in this research activity at DOE on NRC's regulatory program?

CHAIRMAN PALLADINO: Information from the DOE R&D program at TMI-2 holds great significance for the development, safe operation, and effective regulation of nuclear energy. It is expected that the information obtained from DOE core and equipment examinations will greatly augment information on the progression and effects of major reactor accidents. From a regulatory perspective, TMI-2 research data will be valuable in developing better means for accident prevention and mitigation, and reducing uncertainties associated with implementation of the NRC Severe Accident Policy Statement.

Specific regulatory issues which could be affected by information from TMI-2 core examinations include: source term reassessment, emergency planning guidelines, equipment qualification for accident environments, severe accident policy, and safety goal policy. Much of DOE's earlier funding went towards preliminary activities which were required to access the damaged core and commence defueling. Now that core samples are being made available, any program reductions may prove disproportionately costly in terms of lost R&D information.

LICENSING REFORM

MR. BEVILL: Last year, the Commission submitted to Congress a licensing reform legislative package and has testified as to the benefits of implementing such changes within the Commission. Please describe the regulatory reform provisions in your proposed legislation which you feel cannot be incorporated by administrative control as opposed to legislative action.

CHAIRMAN PALLADINO: Although many of the changes set forth in the legislative proposal could probably be adopted without new legislation, the Commission believes that restructuring the licensing process could best be effectuated through legislation. For example, congressional endorsement would facilitate greater use of standardization. Our belief is supported by an April 1981 Report of the Congressional Office of Technology Assessment, "Nuclear Powerplant Standardization," which concluded that standardization could be encouraged by a congressional statement of national policy.

Stability could be added if the basic structure of the licensing process is set forth in a statute and could not be modified by adoption of new NRC regulations.

There are some provisions in the NRC proposal which could not be enacted absent new legislation. Most significantly, Section 101 would give the Commission new authority to issue construction permits without completion dates and without a hearing if no one requests one. Section 101 would also give the Commission new authority to issue combined construction permits and operating licenses for thermal neutron power generation facilities with limited review and hearings connected with beginning of operation. Section 103 would authorize the Commission to issue site permits even if the applicant had not filed a construction permit application and without a hearing if no one requests one. Finally, Sections 103 and 104 would shift the burden of proof on renewals of site permits and design approvals to the Commission to show why there should be no renewal.

MR. BEVILL: What is the status of the Regulatory Reform Task Force and its recommendations for licensing reform?

CHAIRMAN PALLADINO: The legislative proposals drafted by the Regulatory Reform Task Force ("RRTF") are now pending before Congress. The RRTF recommended that the Commission adopt a new rule regarding backfitting of nuclear power plants. The Commission promulgated a final rule on October 21, 1985.

In February of 1986 the RRTF presented to the Commission a draft notice of proposed rulemaking containing suggested amendments to the Commission's regulations governing the nuclear power plant licensing hearing process. Those proposals relate to admissibility of contentions, discovery, the filing of motions for summary judgment and proposed findings of fact and conclusions of law. The Commission has decided to issue the proposals as proposed rules. A Federal Register Notice soliciting public comment will be published in the near future.

The Commission recently decided that the RRTF had fulfilled its mission and terminated the task force. The Office of the General Counsel and the Office of the Executive Legal Director will henceforth perform the duties previously assigned to the RRTF. Specifically, the Commission has directed each of them to be forthcoming with ideas and proposals to improve the administrative licensing process.

MR. BEVILL: Please describe the NRC work done with EPRI leading toward improving the possibility of licensing the next generation of advanced light water reactors.

CHAIRMAN PALLADINO: In mid-1982, EPRI sought the cooperation of NRC in joint execution of an Advanced Standardized LWR Design Evaluation Program.

The objective of this program is the development of a standardized LWR design, free as much as possible, from any potential backfit with an attendant, significant reduction in both design and construction costs as well as significant reduction in the time span from construction permit application to start of full power operation.

Currently the program is divided into three phases. Phase I was completed internally by EPRI in December 1982 and consisted of determination of preferred characteristics for future LWR's, a compilation and categorization of Generic Safety and Licensing issues, a survey of standardization concepts, and development of relationships with vendors, NRC and other key and interested entities.

The cooperative effort with NRC began with Phase II in mid-1983. Phase II, concerning regulatory stabilization, consisted of

NRC/EPRI cooperative program startup, issue resolution methodology, and development of relationships with the Atomic Industrial Forum.

At the outset of the phase II cooperative effort, EPRI presented the staff with a compilation of 510 generic safety and licensing issues, requesting staff review and comment. The purpose of the compilation was to obtain staff comment on several aspects. EPRI asked the staff to add to the list any issues omitted. The list included a priority ranking on which EPRI asked the staff to comment as to appropriateness. The list included notation as to applicability or lack of applicability to future standard designs. Finally, the list noted issues which were resolved and issues which were superseded, terminated or subsumed.

Staff review and comment was provided to EPRI as requested.

As a second step in developing an issue resolution methodology, EPRI presented the staff with a categorical listing of 254 safety and licensing issues which EPRI had determined are not applicable to future standardized LWR designs. The staff reviewed and corroborated EPRI's categorization and identified others to be placed in this category.

The staff and EPRI discussed with ACRS the EPRI program and the list of safety and licensing issues. In its letter dated September 11, 1984, the ACRS reported favorably on the program. They stated, in effect, that the general approach of attempting to categorize safety and licensing issues into groups applicable or inapplicable to new LWR designs should be useful. They also stated that the ACRS supports continuation of the effort and expects to again examine this matter when this work is nearer completion.

Phase II is nearing completion at the present time.

Phase III, which began in late 1985 involves the development of an advanced LWR Requirements Document generated by EPRI with the utility industry and to be reviewed and approved by the NRC. The first chapter of the requirements document is to be sent to the NRC for review in approximately June 1986 and the remaining twelve chapters submitted over the next three years.

At the present time the program with EPRI is scheduled to conclude with the requirements document. Our review of any design developed using this requirements document has yet to be requested.

The Commission intends to issue its Advanced Reactor Policy Statement in the very near future. The policy provides for the organization and personnel necessary to support future standardization efforts.

MR. BEVILL: Please describe the NRC work done with EPRI leading toward developing a requirements document for future nuclear power plants.

CHAIRMAN PALLADINO: The work done with EPRI toward the development of a requirements document for future light water reactors is part of a cooperative effort with EPRI started in 1982.

The purpose of the requirements document is to describe in one place all the requirements (performance, economics, safety and regulatory) which a designer must meet to design a standardized light water reactor. The requirements document will address requirements for both a boiling water and a pressurized water reactor and will include requirements supportable only with proven technology.

The end product will be a utility and NRC approved document encompassing the design envelope for the entire plant, including the nuclear steam supply system, balance of plant and supporting structures and offsite interfaces.

In addition to developing requirements a major goal of this document is regulatory stabilization. To this end the NRC and EPRI are currently developing a process whereby future issues would be screened as to their applicability to the requirements document with only those having a major safety implication affecting the document.

The requirements document will consist of 13 chapters with Chapter 1 "Overall Requirements" being submitted for our review in approximately June 1986. The remaining 12 chapters are to be submitted over approximately a three year period with the NRC review scheduled for completion in early 1990.

Even though EPRI's work is evolutionary, it is expected to be consistent with the forthcoming Commission standardization policy and Advanced Reactor Policy Statement.

MR. BEVILL: Please describe the efforts of INPO and is the National Nuclear Training Academy an effective industry effort?

CHAIRMAN PALLADINO: The cornerstone of the National Nuclear Training Academy is the INPO Accreditation of Training Program, including the National Nuclear Accrediting Board. The Academy consists of training programs at individual utilities which become full members of the Academy once they receive accreditation.

Thus, it is not a "Bricks and Mortar" facility but a concept which is unified through accreditation.

As of March 1, 1986, the Accrediting Board has approved 125 training programs at 27 sites. The industry has committed to having 610 training programs at 61 sites "Ready for Accreditation" by the end of 1986. The NRC is currently evaluating the effectiveness of the accreditation program as the means to improve industry training. As indicated in the Policy Statement on Training and Qualifications (50 FR 11147), the Commission has endorsed the INPO accreditation process for a minimum of 2 years in recognition of the industry's efforts. At the end of the evaluation period, the Commission will consider the need for further action.

CONSOLIDATION

MR. BEVILL: Please describe the status of the NRC effort to relocate the staff in a single location.

CHAIRMAN PALLADINO: The General Services Administration is currently pursuing a purchase option on a building in Rockville, Maryland, that could house approximately 60 percent of the NRC headquarters staff. Future acquisition of a second building on or near the site of the first building is also being considered.

GSA has requested that specific questions regarding status of the negotiations and subsequent procurement activities be referred to the National Capital Regional Office of GSA.

MR.BEVILL: Please describe the funding impact of such a move, i.e., relocate the NRC staff in a single location.

CHAIRMAN PALLADINO: The staff is currently finalizing its cost estimates to relocate the NRC staff. The staff expects to complete its analysis and submit cost estimates to the Commission in the next several weeks.

MR. BEVILL: Have the Commissioners made a strong commitment to move into the facility?

CHAIRMAN PALLADINO: The Commission has aggressively pursued headquarters consolidation since 1975. Our close cooperation with GSA has resulted in the current proposal to consolidate the agency in suburban Maryland. The Commission strongly supports GSA's current efforts to acquire the property and is committed to the relocation of all headquarters elements as soon as the space can be made available.

LICENSEE FEES AND FUNDING ALTERNATIVES

MR. BEVILL: The Committee understands that the Administration plans to submit legislation to increase the fees collected by NRC and to allow the NRC to collect funds from the Commercial Waste Fund. Please explain.

CHAIRMAN PALLADINO: In the President's FY 1987 Budget of the United States Government (page 4-12), the Administration proposed that the NRC impose an annual fee of $500 per million watts of rated thermal capacity on all operating nuclear power plants. There is no mention of NRC collecting funds from the Nuclear Waste

Fund. We do not know when this proposed legislation would be submitted to Congress. In the meantime, on March 20, 1986, Congress passed H.R. 3128, which directs NRC to collect user fees and charges amounting to 33% of our annual budget.

The NRC is preparing a comprehensive report on alternative approaches to increase fees collected by the NRC in response to a request from the Senate Subcommittee on Nuclear Regulation. One such approach is to allow the NRC to collect funds from the Nuclear Waste Fund. The Subcommittee has asked that, in recommending specific approaches, the Commission emphasize three objectives: (1) the funding mechanism should ensure that there is a reasonable and equitable relationship between the fee assessed and the benefit or service provided; (2) the funding mechanism should provide some form of budgetary "credit" to the Commission for fees assessed, so that such fees are applied to NRC activities rather than simply to reduction of the Federal deficit; and (3) the funding mechanism should minimize any regulatory conflict of interest. The report is due April 1, 1986, and a copy will be provided to your Committee.

MR. BEVILL: Please describe all collection of receipts by the NRC. Please explain their use and the effect of the proposed legislation.

CHAIRMAN PALLADINO: The NRC currently assesses license fees for power reactor construction permit and operating license reviews, operating reactor amendments and inspections, Part 55 Operator Exams, standard design reviews, vendor topical reports, non-power reactor licenses, and nuclear material licensing and inspections. The NRC also assesses civil penalties as part of its enforcement program. The revenues collected from license fees and civil penalties are deposited in the U.S. Treasury's Miscellaneous Receipts Account.

MR. BEVILL: Will these changes be implemented without legislation?

CHAIRMAN PALLADINO: H.R. 3128, just passed by Congress and sent to the President for signature, directs NRC to collect additional user fees and charges.

SUNSHINE, EXPARTE AND SEPARATION OF FUNCTION RULE REVISIONS

MR. BEVILL: Please describe the status of the NRC effort to improve your operations under the restrictions of the Sunshine Act.

CHAIRMAN PALLADINO: The NRC, like other federal agencies, is bound both by the Sunshine Act itself and by its own implementing regulations. In the case of the NRC, the implementing regulations are considerably more restrictive than the Act itself requires; they may well be the most restrictive of any agency of the Government. After a unanimous Supreme Court decision in 1984 clarified the Congressional intent underlying the Sunshine Act, the Commission took steps to bring its regulations into conformity with the language of the Act, its legislative history, and the guidance provided by the Supreme Court.

It should be noted that the rule proposed by the Commission, if implemented, would have effected only a modest change in agency functioning. Any fundamental change in the effect of the Sunshine Act on agency functioning would require legislative action by the Congress. It is noteworthy, in that connection, that the Administrative Conference of the United States has commented on the diminution in the collegiality of administrative agencies which has resulted from the Sunshine Act, and has suggested that the Congress consider amending the Act to address that problem.

MR. BEVILL: What is the status of the Commission's proposed revisions to its Government in the Sunshine Act rule?

CHAIRMAN PALLADINO: On January 17, 1986, the Commission received a briefing from its General Counsel on the comments which were submitted on the interim Sunshine Act rule published on May 21, 1985. The briefing also dealt with the General Counsel's proposed revision of the rule in light of those comments. The General Counsel also described to the Commission the effort now underway by a task force of the American Bar Association's Administrative Law Section. The task force is studying a variety of Sunshine Act issues, including the Supreme Court's 1984 decision interpreting the Act (Federal Communications Commission v. ITT World Communications, 104 S. Ct. 1936) and its implications; the NRC's May 21 rule and the General Counsel's suggested revisions of the rule; and the problem of differentiating between the types of discussions which may legally be held in a non-Sunshine Act context and those which bring the Sunshine Act's requirements into play. In view of the fact that the task force's inquiry is so directly germane to the Commission's consideration of its Sunshine Act rule, and that its schedule calls for a final report in April 1986, the Commission decided unanimously to defer action on the Sunshine Act rule until after it has had an opportunity to be briefed on the task force's report.

MR. BEVILL: What is the status of any proposals or recommendations to reduce the restrictions imposed on the Commission by its ex parte and separation of functions rules?

CHAIRMAN PALLADINO: On March 21, 1986, the Secretary of the Commission signed and transmitted to the *Federal Register* a proposed rule that would revise the Commission's current rules on *ex parte* communications and separation of functions. The proposed rule would conform the Commission's provisions regarding *ex parte* communications between adjudicators and persons outside the agency to the requirements of the Government in the Sunshine Act, 5 U.S.C. § 557(d). The proposed rule also would revise the present separation of functions rule to preclude private Commission communications with NRC staff members about a matter at issue in a formal adjudicatory proceeding only if the staff member is an investigator or litigator in the proceeding. Under the current rule, the Commission is precluded from such private communications with any member of the NRC staff whether or not they are involved in a proceeding. By letter dated March 25, 1986, the Office of General Counsel forwarded a copy of this proposed rulemaking to the Subcommittee.

WASTE MANAGEMENT, FUEL CYCLE AND OTHER REGULATORY ISSUES

MR. BEVILL: What needs to be done so that NRC would be ready to license a Monitored Retrievable Storage (MRS) facility if one is authorized by Congress?

CHAIRMAN PALLADINO: The technical criteria in the existing NRC regulation, 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation," are generally applicable to MRS. Only minor changes are likely to be required to explicitly provide the licensing framework for MRS. The proposed changes to 10 CFR Part 72 will soon be published for public comment, thus allowing sufficient time to have a final rule in place for the licensing of MRS if Congress should authorize DOE to proceed with MRS.

NRC advised DOE that, in developing the proposal for MRS, the criteria of 10 CFR Part 72 should be used as reference for the conceptual MRS design. In its review of the DOE proposal, the NRC concluded from the conceptual design that each requirement of 10 CFR Part 72 appeared to be met, although the level of detail at this stage, of course, is less than that needed for a license application. If Congress should authorize MRS, the NRC has agreed to consult with and to provide guidance to DOE during final design efforts. This should assist DOE in the preparation of a complete and technically sound license application.

MR. BEVILL: The NRC waste management licensing staff appears to be larger than the DOE staff responsible for developing the facility itself. Is there a good explanation for this?

CHAIRMAN PALLADINO: When comparing NRC versus DOE staffing, it is important to be aware of the fundamental difference in mission for the two agencies as noted in your question. In performing our regulatory oversight function, the NRC must depend predominantly on in-house staff expertise, augmented with contractor support in specific technical areas. In contrast, we understand that DOE depends primarily on contractors for their repository efforts, with a relatively small in-house staff to plan and manage their overall program.

As shown in the FY 1987 NRC budget submission, the Office of Nuclear Material Safety and Safeguards has requested 105 full-time equivalent staff in FY 1987 for our oversight function of the repository program. While we do not have the corresponding staffing figures for DOE, we understand that the DOE FY 1987 budget request includes approximately $620M in total funding for their repository program. That includes contract assistance, salaries and benefits, travel, and administrative support. The corresponding figure for the total NRC is approximately $24M, which is approximately 4% of the DOE budget.

MR. BEVILL: What prompted the NRC to undertake a reevaluation of the basic design requirements for Babcock and Wilcox reactors?

CHAIRMAN PALLADINO: The Davis-Besse event last summer and the December event at Rancho Seco reinforced the staff's awareness of the sensitivity of B&W plants to operational transients. The Davis-Besse event in June involved a partial loss of feedwater while the plant was operating at 90% power. Following a reactor trip, a loss of all feedwater occurred. The Rancho Seco event in December involved a loss of power to the integrated control system with the reactor operating at about 75% power. Subsequent pump and valve actuations resulted in an overcooling event. Other, less complex, events have also occurred, such as at the Crystal River Plant in February 1980, the loss of ICS power transient at Rancho Seco in January 1979, the loss of power to NNI and ICS at Oconee in November 1979 and the partial loss of NNI at Rancho Seco in March 1984. In the Crystal River event, the reactor was at low power and the operators were transferring from the main feedwater system to a backup system used for low power levels. Some errors occurred, resulting in a pressure transient occurring in the plant. A number of these events, although less severe, highlighted the sensitivity of the design.

As a result of previous assessments of operating experience, and the TMI accident, utilities have been making modifications to the B&W plants, but the number and complexity of such events has not decreased as significantly as expected. In a number of circumstances, the initial transients were similar to previous events, but subsequent responses of the plants and operators were different. Complications occurred due to multiple equipment failures or operator actions that previously may not have been evaluated specifically. In some cases, the responses of the plants and operators to the event and complications were the same as those previously evaluated or were more effective in mitigating the transient than had been previously assumed. As a result of the aforementioned considerations, the staff determined that a reexamination should be undertaken.

MR. BEVILL: A number of plants are now in their second or, in a few cases, third decade of operation. What preparations are being made to address requests for extension of operating life, decommissioning and other licensing issues that may arise as plants reach the end of their current operating licenses?

CHAIRMAN PALLADINO: The issue of life extension is a major factor in the nuclear plant aging research program now underway. This research is being conducted to identify effects of aging and service on structures and components that would have an impact on the safety of operating reactors and to evaluate such measures as surveillance, inspection, testing, maintenance, repair, and replacement that can be cost effective in dealing with such effects. This research will provide a basis for assessing the safety of older plants and will facilitate relicensing to extend effective plant life beyond that originally anticipated.

In the materials area work is underway to develop more accurate methods for measuring radiation dose and effects on pressure vessel material as a basis for evaluating how much additional safe operating time remains, for determining the amount of recovery of vessel embrittlement that can be obtained by post-irradiation annealing, to measure the actual degradation that occurs in operating plants by testing materials removed from decommissioned facilities (Shippingport in the U.S. and Gundremmingen in West Germany), and to validate or improve the fatigue curves in the ASME Boiler and Pressure Vessel Code -- Section III that provides the design basis for primary system components. The results will be needed by the licensing staff as bases for decisions on whether safe operation of older plants beyond their initial licensed lifetime is possible.

In the area of decommissioning, the NRC has issued for public comment rule amendments that deal with preparation for reactor decommissioning by requiring selection of technical decommissioning alternatives, preparation of funding assurance plans and of decommissioning plans, maintaining plant records useful for decommissioning and environment report sections on decommissioning. NRC staff is presently preparing the final rule amendment reflecting public comments and the final environmental impact statement for the rule amendments.

NRC is also preparing regulatory guides to assist licensees to implement the final decommissioning rules in the following areas: Format and Content of Decommissioning Plans, Termination of Reactor Licenses and Assuring of Funds for Decommissioning Reactors. These will give licensees detailed guidance on how the rules should be satisfied.

NRC has issued several research reports on the technology, safety and cost of decommissioning power reactors which can be used by licensees to prepare decommissioning plans and funding assurance plans and assist in terminating licenses. Presently NRC has a DOE laboratory obtaining and compiling information on the decommissioning of the Humboldt Bay and Shippingport reactors and the decontamination of Three Mile Island II reactor. This information on decontamination and decommissioning technique effectiveness, waste types, amount and disposal, manpower requirements and occupational doses is to be used by licensees and by NRC reviewers of decommissioning plans to assist, respectively, in preparation of the plans and in determining if they can be approved by NRC as required by the decommissioning rules.

Other licensing issues that may arise will have to be evaluated and responded to when identified.

MR. BEVILL: Please provide a status report on the current discussions with other federal and state agencies regarding jurisdiction over "mixed" (i.e., radioactive and chemical) wastes.

CHAIRMAN PALLADINO: Negotiations on a memorandum of understanding (MOU) between NRC and EPA to clarify the regulation of low-level radioactive waste sites were deferred by mutual consent in 1984 pending completion of NRC studies to analyze commercial low-level waste streams to determine the extent and nature of the non-radioactive components and to recommend management practices to enhance groundwater protection. The first study identifying the non-radioactive hazardous component in low-level waste was completed in December 1985, and the report on management options was issued for public comment in February 1986. NRC will develop recommendations for regulating disposal of mixed low-level wastes after reviewing the comments on that document and coordinating with EPA.

In parallel with NRC studies on mixed waste, NRC and EPA staffs have been meeting to determine the best way to continue to assure protection of the public health and safety and the environment while at the same time seeking to eliminate unnecessary dual and conflicting regulation of low-level radioactive mixed waste disposal.

During hearings related to the Low-Level Radioactive Waste Policy Amendments Act, both the NRC staff and the EPA testified that acceptable to both agencies, as a resolution of the dual jurisdiction issue, was the delegation of RCRA authority to NRC for mixed wastes. Legislation was deemed necessary, because the existing RCRA statute only allows EPA to delegate its RCRA authorities to states, but not to other federal agencies. However, NRC's position at that time was based on an incomplete understanding of the full impact and of the status of EPA's implementation of the RCRA Amendments Act of 1984.

As part of our continuing interagency consultations, NRC staff has come to appreciate the impacts of the RCRA amendment requirements on implementation of the Low-Level Radioactive Waste Policy Amendments Act. These include impacts on applying RCRA directly to currently operating sites and RCRA regulatory uncertainties which will impact implementation of the Low-Level Radioactive Waste Policy Amendments Act milestones for obtaining new low-level waste disposal sites.

The mixed waste regulatory uncertainty has led NRC staff to conclude that delegation of RCRA authority to the NRC in and of itself may not provide a complete solution to the mixed waste issue. Thus, NRC staff no longer supports any of the earlier proposed legislative approaches, while seeking to reach a technical solution in coordination with EPA.

Using the information provided by the recently completed studies and in coordination with EPA staff, NRC staff is in the process of considering options available for regulating the disposal of these mixed wastes. This consideration has not yet been completed. The NRC staff goal is to assure that the actions required under the Low-Level Radioactive Waste Policy Amendments Act can proceed while a legislative solution is developed for mixed waste.

MR. BEVILL: Please describe the recent accident at the Sequoyah Fuels uranium processing facility in Oklahoma. What were the major lessons learned from this event?

CHAIRMAN PALLADINO: On January 4, 1986, there was an accident at the Kerr-McGee Sequoyah facility, located near Gore, Oklahoma. It involved the release of a large quantity of uranium hexafluoride (UF_6) from a cylinder. Upon exposure to air, UF_6 rapidly combines with moisture to form uranyl fluoride (UO_2F_2) and hydrofluoric acid (HF). Although not radioactive, the latter is a very corrosive acid that can be lethal if a person is exposed to sufficient concentrations. The one death resulting from the Kerr-McGee accident was due to pulmonary edema caused by exposure to hydrofluoric acid.

The incident occurred when an overfilled cylinder was being heated using atmospheric steam prior to removing the excess UF_6. Heating of an overfilled cylinder is a direct violation of the procedures that were established by the licensee. If the established procedures had been followed, it is highly unlikely that the cylinder would have ruptured. Based on visual examination of the cylinder, technical specialists preliminarily concluded that the rupture was caused by hydraulic pressure caused by the expansion of the UF_6 during heating. However, the exact cause of the rupture is being confirmed by laboratory analysis and calculations. Immediately following the accident, an NRC Augmented Investigation Team (AIT) conducted an investigation into the cause of the event. In addition, an NRC team inspection was conducted in late February. The inspection team conducted a comprehensive review of licensed activities. While all enforcement actions have not yet been determined, it appears that the findings of the AIT and the team inspection will show a number of violations of regulatory requirements. The Augmented Investigation Team report was published on March 13, 1986. A copy has been provided to the Committee.

An Ad Hoc Interagency Public Health Assessment Task Force was formed to assess the nonradiological and radiological effects of the accident. The health effects report will be available in the near future.

A Lessons Learned Group has begun to review the staff reports to assess the steps that NRC might reasonably take to prevent similar accidents from occurring, examine NRC's role in licensing and inspecting plants of this type, and determine the adequacy of the NRC response to the accident and follow-up actions. The lessons learned effort will follow the investigations, with a report expected in April 1986.

We are also examining any regulatory gaps particularly between EPA and NRC as they relate to emergency planning and response at such fuel cycle facilities and will determine any remedial actions if needed.

MR. BEVILL: How do the radiological risks from accidents at the Sequoyah Fuels and similar fuel cycle facilities compare with those of commercial nuclear reactors?

CHAIRMAN PALLADINO: The radiological risks from accidents at fuel cycle facilities, such as Sequoyah, are minor compared to those at a reactor. A commercial nuclear reactor has a large quantity of stored energy and contains a large inventory of fission products which if accidentally released could adversely effect the environment.

MR. BEVILL: How do the radiological risks compare with those posed by chemical hazards at these facilities?

CHAIRMAN PALLADINO: The hazard at fuel cycle facilities is mainly from heavy metal poisoning due to the chemical toxicity of uranium. Also fuel cycle facilities are basically chemical plants with an inventory of hazardous chemicals not dissimilar from those found at other industrial chemical plants.

The health effects task force report, "Assessment of the Public Health Impact from the Accidental Release of UF_6 at the Sequoyah Fuels Corporation Facility at Gore, Oklahoma", NUREG-1189 assesses both the non-radiological (chemical effects) and radiological effects. The non-radiological effects encountered by the SFC workers involved in the incident were due to the exceptionally high uranium exposures and intakes. At least some temporary renal (kidney) injury can be expected with exposure at these levels. Seven offsite individuals received low-level uranium exposure. It is possible that some may have suffered short-term changes in kidney function due to the chemical toxicity of the uranium. The Task Force concluded that the radiation exposure from the accident had not perceptibly increased the individual cancer risk for the local population. The death of one worker was attributed to the chemical effects of exposure to hydrogen fluoride.

MR. BEVILL: Are there any reactors presently ready to operate but are not being allowed to operate? Name them and explain the reasons for delay in licensing.

CHAIRMAN PALLADINO: Shoreham is the only plant which is currently ready to start operations (full power) but is not permitted to do so. The ASLB has ruled that "reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency" is lacking for Shoreham. The Board's decision rested on, among other things, LILCO's lack of legal authority to implement its offsite plan, and the absence of a State plan indicating that there would be an integrated, cooperative and coordinated offsite response in the event of an emergency.

MANAGEMENT ISSUES

MR. BEVILL: Please describe any legislative proposals for providing the NRC with user fee authority.

CHAIRMAN PALLADINO: H.R. 3128, the Consolidated Omnibus Budget Reconciliation Act of 1986, which has now been sent to the President for signature, directs the NRC to collect user fees and charges that, when added to other amounts collected by the Commission, shall not exceed 33 percent of the NRC budget for each fiscal year. Under the Independent Offices Appropriation Act of 1952, the Commission currently assesses fees which are expected to be approximately $60 million in FY 1986. Assuming the current level of NRC expenditures, charges assessed pursuant to the authority provided by H.R. 3128 are expected to result in additional fees of about $75-$80 million annually. According to the conferees on H.R. 3128, the charges shall be reasonably related to the regulatory service provided and shall fairly reflect the cost to the Commission of providing the service. This authority is intended to be separate and distinct from the Commission's existing authority under the Independent Offices Appropriations Act.

MR. BEVILL: Has the Commission developed a plan for promptly implementing user fee authority now under consideration by Congress?

CHAIRMAN PALLADINO: On March 20, 1986, Congress passed H.R. 3128, the Consolidated Omnibus Budget Reconciliation Act of 1985. It is our understanding that this Act contains a requirement for the NRC to submit a report within 90 days which would include, among other things, any recommendations of the Commission for expanding the existing statutory authority to assess and collect fees, including the Commission's justification for such expansion. Also, there is a requirement that the amount of charges assessed shall be established by rule. The staff is currently in the process of preparing the required report and a plan for preparing the required rulemaking is under development.

MR. BEVILL: To what extent does NRC monitor incoming and outgoing telephone calls?

CHAIRMAN PALLADINO: NRC prohibits the monitoring or recording of telephone conversations by NRC personnel without the express consent of all parties except in three specific situations. First, under conditions cited in Federal Information Resource Management Regulations subpart 201-6.2, the NRC Operations Center records all incoming and outgoing calls under these provisions for protection of public health and safety. Second, monitoring (without recording) is permitted where one party to a telephone conversation is threatening the safety of persons or property. Finally, monitoring is permitted under 18 U.S.C. Section 2510, "Title III, Omnibus Crime Control and Safe Streets Act of 1968" and 50 U.S.C. Section 1801, "Foreign Intelligence Surveillance Act of 1978"; however, the NRC has not exercised such authority.

MR. BEVILL: Is there a different policy for monitoring telephone calls in Headquarters than in the field organizations?

CHAIRMAN PALLADINO: There is no different policy for monitoring telephone calls in Headquarters and field organizations.

MR. BEVILL: What is the status of the program to develop qualitative safety goals?

CHAIRMAN PALLADINO: A proposed policy on safety goals was sent by the staff to the Commission on February 14, 1986. The Commission was briefed on the staff proposal on February 20, 1986. The staff proposal is now under active consideration by the Commission and by its Advisory Committee on Reactor Safeguards (ACRS). It should be noted however, that the staff proposal contains an innovative integrated approach for safety goal implementation on which the Commission may elect to seek further public comment prior to finalizing its policy statement. We also have the benefit of ACRS advice on this staff proposal.

MR. ROBERTS: My views on the safety goals were provided to Chairman Palladino in January. I believe that the Commission should publish in final form that part of the safety goals covering the individual and societal risks. The approach is consistent with the Commission's original purpose for safety goals, namely, to state how safe is safe enough from an individual and societal perspective. However, I find the matrix proposed by the staff and its basis somewhat difficult to understand. Consequently, I agree that we should continue its evaluation together with the core melt and cost-benefit guidelines. Since the approach proposed by the staff is new and untested, I also agree that the industry and the public should be given an opportunity to comment on the matrix and the regulatory uses to which it would be put.

MR. BEVILL: When will this effort be implemented?

CHAIRMAN PALLADINO: It is currently anticipated that the Commission will decide on its final policy statement during this fiscal year.

MR. BEVILL: DOE is now talking about private companies developing and owning AVLIS enrichment plants. Has DOE initiated discussions with you on licensing requirements for a privately owned enrichment plant?

CHAIRMAN PALLADINO: In the mid-seventies when consideration was being given to the private ownership of gaseous diffusion enrichment plants, the AEC/NRC began work on a proposed rulemaking for uranium enrichment. A new Part 52 was planned, as Part 50 was deemed inappropriate for such plants. As part of the proposed rule, General draft Design Criteria were developed. The design criteria were reviewed by the Advisory Committee on Reactor Safeguards in a public meeting. Later, when the decision was made by the government not to pursue private ownership of gaseous diffusion plants, the rulemaking activities were stopped.

Sometime after ERDA/DOE began their program on centrifuge enrichment, the NRC had discussion with ERDA/DOE regarding the licensing of such plants. NRC informed ERDA/DOE that the General Design Criteria developed for gaseous diffusion plants would be applied to centrifuge enrichment facilities. The NRC was not requested to pursue the issue and no further work was undertaken, although the NRC did keep in contact with DOE. In the past two years or so, DOE and NRC staff have held discussions on the Atomic Vapor Laser Isotopic Separation (AVLIS) process and technology. The last such meeting was held in August, 1985. The licensing of such privately owned facilities was discussed. At that time, it was not clear whether DOE would pursue a path of government or private ownership or some combination of government ownership with private participation. The NRC staff provided DOE with a copy of the draft General Design Criteria developed for gaseous diffusion plants and copies of selected Regulatory Guides that would have applicability in the licensing of diffusion plants.

Since the 1985 meeting, the staff has kept in touch with DOE. DOE has not made a formal request to NRC to develop licensing criteria that would be applicable to the operation of a plant, under private ownership, using AVLIS technology.

MR. BEVILL: Would you work with DOE to initiate a joint licensing study and report to this Committee the scope and schedule that you jointly develop?

CHAIRMAN PALLADINO: The NRC staff has a standing working relationship with DOE to keep abreast of DOE's actions regarding the transfer of enrichment technology to the private sector. The staff would be pleased to work with DOE on a joint licensing study as long as this relationship did not compromise NRC's ability to remain independent with respect to its regulatory responsibility and authority.

MR. BEVILL: The Grace Commission issued several reports a number of years ago on agency management and operations. Could you tell the Committee what action you have taken to address the recommendations of the Grace Commission and what the results have been?

CHAIRMAN PALLADINO: The Grace Commission recommended that Congress transfer all non-safety functions currently performed by the NRC to other agencies with relevant competence; that Congress strengthen the authority of the Chairman and the Executive Director for Operations; that the President direct the General Services Administration to take prompt action to consolidate the NRC in a single building; that the Commission vigorously implement its January 1982 Policy and Planning Guidance and eliminate the administrative bars which constrain technical advice from the staff to the Commission; and that the Commission not transfer further regulatory functions to the NRC's regional offices without explaining publicly the intent of such moves, considering the views of affected licensees, and carefully reviewing the impact on regulatory consistency from actions which had already been taken.

Responsibility to act on the first three of these recommendations rests with Congress and the President. The Commission's views on strengthening the authority of the Chairman and EDO were presented to the Subcommittee during the NRC's FY 1986 budget hearings. The Commission has also been working closely with the GSA in negotiations to provide suitable space to consolidate NRC headquarter activities in the Washington metropolitan area.

The Commission prepares and publishes a Policy and Planning Guidance document annually. This is distributed to all employees to provide policy guidance throughout the year. With respect to eliminating administrative bars to communications between the staff and Commission, the Commission decided not to change the role of the staff in hearings at public meetings on December 18, 1984 and January 9, 1985. However, the Commission still recognized the need to modify the rules regarding the separation of functions and ex parte rules. Further proposals were developed by the General Counsel. The proposals were sent to various NRC offices for comment. On the basis of these comments, in October 1985 the General Counsel provided the Commission with a draft rule. Several of the Commissioners responded with questions and suggested changes, and a revised proposed rule was provided to the Federal Register for publication for comment on March 26, 1986.

Finally, the Commission published a Policy Statement on Regionalization in March 1983 seeking public comment. Based on the comments received, the Commission decided in March 1984 that regionalization was essentially complete except for a pilot program of certain technical reviews of operating license amendments. It determined that licensing authority and reactor licensing managers would not be transferred to the regions with some exceptions; nonpower reactor licensing and license fee management would not be decentralized.

ADDITIONAL INFORMATION

MR. BEVILL: Provide a summary table of the Gramm-Rudman-Hollings sequestrations, by appropriation account and a copy of agency guidance with regard as to how reductions were to be made.

CHAIRMAN PALLADINO: The Gramm-Rudman-Hollings sequestration applicable to NRC's Appropriation Account (Salaries and Expenses) is $17,974,000.

With your permission, I will submit for the record a copy of agency guidance with regard to how reductions are to be made under the uniform sequestration implementation and subsequent proposed revisions in order to minimize impact to our highest priority program. We are preparing a request for reprogramming approval to make adjustments to these reductions.

(The information to be provided follows:)

Corrected Page

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

January 24, 1986

MEMORANDUM FOR: Chairman Palladino

FROM: Victor Stello, Jr.
Acting Executive Director
for Operations

SUBJECT: FY 1986 BUDGET REDUCTION

On January 14, 1986, I informed you of the initial allocation of the FY 1986 budget reductions required by the Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177/Gramm-Rudman-Hollings). The NRC reduction of $18 million was initially allocated proportionately to each of the six programs, with the exception that current salary and benefit funding estimates were not reduced. This decision was based on OMB guidance which allowed for certain flexibility below the NRC appropriation account level.

On January 17 and 21, 1986, the staff received revised instructions from OMB that specified that uniform reductions against our appropriation must be taken below the account level to be in compliance with the President's Order implementing provisions of the Act. (See OMB Bulletin No. 86-7 at Attachment 1.) The staff has confirmed these instructions with NRC's OMB examiner and has written to OMB on this matter (Attachment 2). In accordance with these new instructions, the initial allocation of the NRC reduction has been revised and resulting changes to our total funding availability for FY 1986 is shown in the following table.

FY 1986
(Dollars In Thousands)

Program	Current Estimate	Reduction	Revised Estimate
Nuclear Reactor Regulation	$ 83,760	$ 3,478	$ 80,282
Nuclear Material Safety and Safeguards	40,970	1,705	39,265
Inspection and Enforcement	98,240	4,075	94,165
Nuclear Regulatory Research	134,710	5,665	129,045
Program Technical Support	30,290	1,261	29,029
Program Direction and Administration	43,342	1,790	41,552
Total	$431,312	$17,974	$413,338

OMB Bulletin No. 86-7 also requires agency submittal of program funding level detail of these reductions to the Congress, OMB and GAO on February 1, 1986. This information, in prescribed format, is being prepared for your transmittal.

We have been informed by OMB that requests for reprogramming of these initial allocations will be allowed after March 1, 1986. We are currently evaluating the specific impacts of these reductions and final recommendations for the FY 1986 budget will be submitted to the Commission for consideration in mid-February.

If you have any questions regarding these matters, please contact R. Scroggins.

Original signed by
Victor Stello

Victor Stello, Jr.
Acting Executive Director
for Operations

Attachments (2):
As stated

cc w/attachments:
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech
Office Directors
Regional Administrators

bcc w/attachments:
VStello, Jr., EDO
JRoe, DEDO
PRabideau, RM/B
EDO M/R
RScroggins, RM
LHiller, RM
RM R/F
ETriner, RM/B
RShumway, RM/B
LSchaub, RM/B
NMonaco, RM/B
LDonnelly, RM/B
RHartfield, RM/B
Actg Director, RM/D
GJohnson, RM/A
RM/B R/F
Subject File
5520-PALLADINO EASTON

RM	DEDO	Acting EDO
RScroggins/epe	JWRoe	VStello
01/23/86	01/ 2/86	01/ /86

OFFICIAL RECORD COPY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

Stello
Roe
Rehm
Sniezek
Rabideau
Scroggins
Norry
Minogue
Denton
Taylor
Davis
Shea
EDO R/F

March 16, 1986

MEMORANDUM FOR: Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech

FROM: Nunzio J. Palladino NJP

SUBJECT: FY 1986 BUDGET REDUCTION

In consideration of your recommendations as to how to allocate the $18 million Gramm-Rudman reduction, I can agree to the following modifications to the table attached to Victor Stello's February 25, 1986:

- Restore $200 thousand to the Vendor Inspection Program. At this level, verification of licensee EQ compliance will be delayed about six months rather than a year.
- Restore $100 thousand to strengthen IAEA safeguards.
- Reduce administrative support by an additional $300 thousand; as much as possible should be taken from the DCS. The DCS follow-on study that is due to the Commission by April 15, 1986 should identify potential cost savings in DCS operations.
- The staff should evaluate whether the number of Q clearances in the agency can be reduced. Their findings and recommendations should be provided to the Commission by the mid-year review. Potential savings in this area should be used to process all new Q clearances on an expedited basis.

In response to Commissioner Roberts' and Commissioner Bernthal's comments on Aerial Measurement Services, I believe that the proposed reductions in this program will not impair our ability to react to incidents or baseline new facilities, and that it is appropriate for periodic facility updates to be reduced. Regarding Commissioner Asselstine's and Commissioner Bernthal's desire to retain funding for advanced reactor work in NRR, I continue to support Victor Stello's recommendation to reduce this effort considering the amount of our mandatory reductions and given our relative priorities.

With respect to Commissioner Asselstine's long list of questions pertaining to the research program, while I acknowledge that these questions are of interest, I do not believe that we have sufficient time or resources to respond to them before a decision is needed on the final FY 1986 allocation. Further, I do not believe that a lengthy analysis will change the fact that we must make cuts in the research program given the agency's overriding operational priorities.

Unless a majority of the Commission objects to the above decisions by COB March 17, 1986, the EDO is instructed to implement them.

cc: SECY
EDO ✓
OPE
OGC

FEB 25 1986

MEMORANDUM FOR: Chairman Palladino

FROM: Victor Stello, Jr.
Acting Deputy Executive Director
for Operations

SUBJECT: FY 1986 BUDGET REDUCTION

Reference is made to my January 24, 1986 memorandum advising you of the initial allocation of the FY 1986 budget reductions required by the Balanced Budget and Emergency Deficit Control Act of 1985 (Public Law 99-177). OMB has advised the staff that the recent District Court Panel decision regarding P.L, 99-177 will not impact the scheduled March 1, 1986 sequestration. As such, NRC's available funding for FY 1986 is being reduced about $18 million. In accordance with the President's Order of February 1, 1986 implementing the provisions of the Act, these reductions were taken uniformly against each of NRC's six programs identified in my January 24, 1986 memorandum.

Attachment 1 contains my recommendation as to how the reduction of $18 million should be allocated in order to minimize the impact of this reduction on our highest priority activities. Details on the proposed budget reductions and their program impacts are included in Attachment 2. The proposed reduction of $1.0 million in estimated salary and benefit costs results from revised estimates of such costs in FY 1986 based on projected FTE utilization rates. No staff reductions are proposed as a result of P.L. 99-177 in FY 1986. I will continue to address the issue of FTE management in accordance with my January 15, 1986 memorandum on that subject.

Subsequent to the Commission's decision on these recommended budget reductions, letters to our Congressional Oversight Committees, which request reprogramming approval, will be provided for your signature.

Original signed by
Victor Stello

Victor Stello, Jr.
Acting Executive Director
for Operations

Attachments (2):
As stated

cc w/attachments:
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech
Office Directors
Regional Administrators

bcc:
JRoe, DEDO
PRabideau,OEDO
EDO R/F
RScroggins, RM
RM R/F
Budget R/F
VStello
TRehm
JSniezek
ETriner, RM/B
RShumway, RM/B
NMonaco, RM/B
LDonnelly, RM/B
RHartfield, RM/B
Subject File

ATTACHMENT 1

FY 1986 BUDGET SUMMARY
(DOLLARS IN MILLIONS)

PROGRAMS	FY 1986 CURRENT ESTIMATE	1/24/86 REDUCTION 1/	RECOMMENDED REDUCTION	FY 1986 REVISED ESTIMATE
NRR	$ 83.8	$ 3.5	-$ 3.0	$ 80.8
NMSS	41.0	1.7	- 1.8	39.2
IE	98.2	4.1	- 2.6	95.6
RES	134.7	5.7	- 8.9	125.8
PTS	30.3	1.2	- 0.7	29.6
PDA	43.3	1.8	- 1.0	42.3
TOTAL	$431.3	$18.0	-$18.0	$413.3

1/ AS IDENTIFIED IN V. STELLO'S JANUARY 24, 1986 MEMORANDUM TO CHAIRMAN PALLADINO WHICH ALLOCATED THE BALANCED BUDGET AND EMERGENCY DEFICIT CONTROL ACT REDUCTIONS PROPORTIONATELY TO EACH PROGRAM AS REQUIRED.

Attachment 1

FY 1986 Budget Summary 1/
(Dollars in Millions)

Program Support	FY 1986 Current Estimate	FY 1986 Revised Estimate	Allocation of Reduction
NRR	$ 30.9	$ 28.8	-$ 2.1
NMSS	16.3	14.9	- 1.4
IE	21.2	19.9	- 1.3
RES	118.4	109.7	- 8.7
PTS	5.1	4.8	- 0.3
PDA	1.9	1.7	- 0.2
Sub-Total Program Support	$ 193.8	$ 179.8	-$14.0
Salaries and Benefits	171.5	170.5 2/	- 1.0
Administrative Support	56.5	53.5	- 3.0
Travel	9.5	9.5	0
Total	$ 431.3	$ 413.3	-$18.0

1/ Further details are contained in Attachment 2.

2/ The revised salary and benefit estimate is based on projected FTE usage.

ATTACHMENT 2

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)

NUCLEAR REACTOR REGULATION	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
PS $	$30.9	$28.8	-$2.1
OPERATING REACTOR	14.1	12.95	- 1.15

- REDUCE CONTRACTOR SUPPORT FOR LICENSING ACTION REVIEWS BY $950K. AS A RESULT, COMPLETE ABOUT 120 FEWER LICENSING ACTIONS; ABOUT 3% LESS THAN PLANNED. (FROM $12,800K TO $11,850K)
- REDUCE CONTRACTOR SUPPORT FOR CONDUCTING UNANTICIPATED GENERIC SAFETY STUDIES. ($200K)(FROM $1,347K TO $1,147K)

NUCLEAR REACTOR REGULATION	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
SYSTEMATIC SAFETY EVALUATION OF OPERATING REACTORS	0.4	0.4	0
OPERATOR LICENSING	3.4	3.4	0
CASEWORK	4.9	4.75	- 0.15

- REDUCE CONTRACTOR SUPPORT FOR CONDUCTING GENERAL SAFETY STUDIES. ($150K)(FROM $500K TO $350K)

NUCLEAR REACTOR REGULATION	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
SAFETY TECHNOLOGY	7.9	7.1	- 0.8

- REDUCE THE ADVANCED REACTOR PROGRAM IN FY 1986 TO THE FY 1987 LEVEL. THIS WILL ELIMINATE CONTRACT SUPPORT FOR DEVELOPING CRITERIA AND REVIEWING ADVANCED REACTOR CONCEPTS, BUT WILL MAINTAIN EFFORT TO INTERACT WITH DOE AND INDUSTRY ON ADVANCED REACTORS. ($800K)(FROM $900 TO $100K)

NUCLEAR REACTOR REGULATION	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
TMI-2 CLEANUP	0.2	0.2	0

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)

NUCLEAR MATERIAL SAFETY AND SAFEGUARDS	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
PS $	$16.3	$14.9	-$1.4

FUEL CYCLE FACILITY AND NUCLEAR MATERIAL SAFETY

	3.6	3.4	- 0.2

- DELAYS BY APPROXIMATELY ONE YEAR NRC REVIEW OF LICENSEE REMEDIAL ACTION PLANS AND NRC REVIEW OF LICENSEE REMEDIAL ACTIONS AT APPROXIMATELY HALF OF THE TWELVE SITES CURRENTLY UNDERGOING DECONTAMINATION. ($200K)(FROM $500K TO $300K)

SAFEGUARDS

	3.5	3.4	- 0.1

- CONTRACTUAL SUPPORT FOR NRC EFFORTS TO STRENGTHEN IAEA SAFEGUARDS WILL BE ELIMINATED -- WILL DELAY RESPONSE TO IAEA REQUESTS FOR ASSISTANCE. THE AMOUNT OF DELAY IS UNKNOWN AT THIS TIME. OTHER PARTICIPANTS ON THE INTERAGENCY ACTION PLAN WORKING GROUP WILL BE REQUESTED TO PROVIDE THIS ASSISTANCE. ($100K)

HIGH-LEVEL WASTE MANAGEMENT

	6.5	6.0	- 0.5

- REDUCE NRC'S ABILITY TO IDENTIFY AND RESOLVE POTENTIAL LONG LEAD TIME LICENSING ISSUES WITH SUFFICIENT LEAD TIME TO AVOID COSTLY AND UNNECESSARY REWORK. ($500K)(FROM $3,300K TO $2,800K)

LOW-LEVEL WASTE MANAGEMENT

	2.6	2.1	- 0.5

- ELIMINATE CONTRACTOR SUPPORT FOR SEISMO-TECTONIC CONSIDERATIONS FOR CONVENTIONAL AND ALTERNATIVE DISPOSAL TECHNOLOGIES. ($50K)
- ELIMINATE CONTRACTOR SUPPORT FOR DEVELOPING DECOMMISSIONING POLICY FOR URANIUM MILLS--WILL DELAY NRC REVIEWS OF ANTICIPATED LICENSE AMENDMENT APPLICATIONS BY APPROXIMATELY ONE YEAR. ($450K)

NUCLEAR MATERIAL SAFETY AND SAFEGUARDS (CONT)	FY 1986		
	PLANNED LEVEL	REDUCED LEVEL	CHANGE FROM PLANNED LEVEL
MANAGEMENT DIRECTION AND SUPPORT			
	0.1	0	- 0.1

- ELIMINATES NMSS DIRECTOR'S DISCRETIONARY FUNDS FOR CONDUCTING POLICY AND MANAGEMENT STUDIES. ($100K)

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)

INSPECTION & ENFORCEMENT	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
PS $	$21.2	$19.9	-$1.3
REACTOR CONSTRUCTION	0.8	0.8	0
REACTOR OPERATIONS	6.3	5.8	- 0.5

- DECREASE INSPECTION SUPPORT INCLUDING: (1) REDUCTION OF THE AERIAL MEASUREMENT PROGRAM BY 25%, THEREBY DEGRADING NRC'S ABILITY TO MONITOR CHANGES TO BACKGROUND AND RESIDUAL RADIATION LEVELS AT NEWLY LICENSED OPERATING REACTORS AND SELECTED MILL TAILING SITES; AND (2) DELAY BY 12 MONTHS PROCUREMENT OF REPLACEMENT OR ENHANCED EQUIPMENT FOR ENVIRONMENTAL SAMPLE ANALYSIS. ($200K)(FROM $2,249K TO $2,049K)
- REDUCE SUPPORT TO EMERGENCY PREPAREDNESS EXERCISES AND ANNUAL INSPECTIONS BY ABOUT 20 PERCENT THUS CURTAILING SCOPE AND DEPTH OF THE BASIC INSPECTIONS AND OBSERVANCE OF ANNUAL EXERCISES. ($300K) (FROM $1,420K TO $1,120K)

VENDOR AND QUALITY ASSURANCE	3.1	2.5	- 0.6

- REDUCE SUPPORT TO THE VENDOR INSPECTION PROGRAM BY ABOUT 50 PERCENT THUS DELAYING BY ONE YEAR VERIFICATION OF LICENSEE IMPLEMENTATION OF ENVIRONMENTAL QUALIFICATION OF EQUIPMENT AND IMPACTING THE AGENCY'S ABILITY TO MONITOR LICENSEE'S ACTIVITIES RELATED TO THEIR VENDOR-SUPPLIERS AND TO IDENTIFY AND FOLLOWUP ON POTENTIAL SAFETY ISSUES. ($500K)(FROM $1,100K TO $600K)
- REDUCE SUPPORT TO QA PROGRAM DEVELOPMENT THUS DELAYING BY 9 MONTHS DEVELOPMENT OF PERFORMANCE BASED QA INSPECTION PROGRAM AND QA STANDARDS DEVELOPMENT ACTIVITIES. ($100K)(FROM $1,020K TO $920K)

ENFORCEMENT, TECHNICAL SUPPORT AND INCIDENT RESPONSE	8.1	7.9	- 0.2

- REDUCE BY ABOUT 50 PERCENT THE SCOPE OF A STUDY ON IMPROVING THE EFFECTIVENESS OF COMMUNICATIONS THUS IMPACTING THE AGENCY'S ASSURANCE THAT INFORMATION IS BEING RECEIVED AND IMPLEMENTED BY THE LICENSEES ON A TIMELY BASIS. ($150K)(FROM $300K TO $150K)
- DELAY BY ABOUT SIX MONTHS DEVELOPMENT OF A PROGRAM TO PERMIT THE NRC TO OPERATE AS A CATEGORY B AGENCY IN THE EVENT OF A NATIONAL EMERGENCY. ($50K)(FROM $100K TO $50K)

	FY 1986		
INSPECTION & ENFORCEMENT (CONT)	PLANNED LEVEL	REDUCED LEVEL	CHANGE FROM PLANNED LEVEL
FUEL CYCLE AND MATERIALS	$0.9	$0.9	$0
SPECIALIZED TECHNICAL TRAINING	2.0	2.0	0

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)

NUCLEAR REGULATORY RESEARCH

ACTIVITIES IMPACTED BY REDUCTION		ACTIVITIES MAINTAINED	
REACTOR ENGINEERING			
$ 0.7	ELIMINATE NONLINEAR EFFECT OF LARGER EARTHQUAKES ON STRUCTURES IN SEISMIC DESIGN MARGINS	$ 6.5	SEISMIC DESIGN MARGINS
1.3	SLOW ENVIRONMENTALLY ASSISTED FATIGUE PROBLEMS IN STEELS	2.3	MECHANICAL EQUIPMENT QUALIFICATION
0.9	TERMINATE ELECTRICAL EQUIPMENT SURVIVABILITY WORK	4.2	CONTAINMENT INTEGRITY
$ 2.9		1.7	NONDESTRUCTIVE EXAMINATION
		6.0	PIPING - STEAM GENERATORS
		9.3	REACTOR VESSELS
		2.0	ELECTRICAL EQUIPMENT
		4.5	PLANT AGING
		$ 36.5	
THERMAL HYDRAULIC TRANSIENTS			
$ 0.5	REDUCE SEMISCALE MAINTENANCE SUPPORT UPON COMPLETION OF TESTING	$ 3.1	MIST
0.6	TERMINATE RELAP5 IN ROSA-IV	3.1	2D/3D
0.5	EFFORTS ON TWO-PHASE FLOW ANALYSES DEFERRED.	1.2	ROSA-IV
0.5	SLOW NUCLEAR PLANT ANALYZER PROGRAM AT INEL.	0.3	FIST
0.7	ELIMINATE INTERNATIONAL WORKSHOPS	2.7	INTEGRAL TESTING
$ 2.8		3.1	SEPARATE EFFECTS
		5.2	TRANSIENT MODELS & CODES
		$ 18.7	
ACCIDENT EVALUATION			
$ 0.3	TERMINATE PILOT PROGRAM FOR SEVERE ACCIDENT MGMT IN BWRS	$ 3.2	SEVERE ACCIDENT SEQUENCE ANALYSIS
1.0	TERMINATE ACRR SEPARATE EFFECTS FISSION PRODUCT RELEASE EXPERIMENTS	6.2	DAMAGED FUEL
$ 1.3		8.5	CONTAINMENT LOADING
		10.7	FISSION PRODUCT SOURCE TERM
		$ 28.6	

FY 1986 BUDGET REDUCTIONS
(Dollars in Millions)

NUCLEAR REGULATORY RESEARCH

Activities Impacted by Reduction		Activities Maintained	
REACTOR OPERATIONS & RISK			
$ 1.0	Terminate development of needed guidance on the effectiveness of physical security systems	$ 3.4	Reliability & Risk Methodology
		1.4	Data & Uncertainties
		5.2	Regulatory & Inspection Applications
$ 1.0		4.2	Severe Accident Risk
		$ 14.2	
WASTE MANAGEMENT, EARTH SCIENCES & HEALTH			
$ 0.3	Defer initiation of site specific response for reevaluations & delay resolving extent of capable fault in Oklahoma	$ 4.7	Earth Sciences
		2.2	Health Effects
0.4	Initiate termination of health effects & rad prot work & stretch out revision to Part 20	3.0	High Level Waste
$ 0.7		1.8	Low Level Waste
		$ 11.7	
TOTALS: $8.7		$109.7	

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)

NUCLEAR REGULATORY RESEARCH	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
PS $	$118.4	$109.7	-$8.7
REACTOR ENGINEERING	39.4	36.5	- 2.9

- ELIMINATE EVALUATION OF NONLINEAR EFFECTS OF LARGER EARTHQUAKES ON STRUCTURES USED IN ANALYSES THAT PREDICT THE BEHAVIOR OF OPERATING PLANTS. ($700K) (FROM $13,700K TO $13,000K)
- SLOW UNDERSTANDING OF OVERALL ENVIRONMENTALLY ASSISTED FATIGUE PROBLEM IN STEELS. ($1,300K) (FROM $18,300K TO TO $17,000K)
- TERMINATE WORK TO EVALUATE SURVIVABILITY OF ELECTRICAL EQUIPMENT DURING SEVERE ACCIDENTS OR HYDROGEN BURNING LIMITING NRC'S ABILITY TO EVALUATE INDUSTRY QUALIFICATION PLANS. ($900K) (FROM $7,400K TO $6,500K)

THERMAL HYDRAULIC TRANSIENTS	21.5	18.7	- 2.8

- REDUCE SEMISCALE FACILITY MAINTENANCE SUPPORT, PENDING FINAL DECISION REGARDING POSSIBLE FUTURE INTEGRAL TESTING FACILITY. RESTART, IF NEEDED, WOULD REQUIRE 9 MONTHS. TERMINATE RELAP5 IN ROSA-IV. ($1,100K) (FROM $11,500K TO $10,400K)
- EFFORTS ON TWO-PHASE FLOW ANALYSES WILL BE DEFERRED RESULTING IN UNVERIFIED CODE ASSUMPTIONS. ($500K) (FROM $3,600K TO $3,100K)
- ELIMINATE INTERNATIONAL WORKSHOPS & CHANGE BILATERAL AGREEMENTS TO REFLECT SCOPE REDUCTIONS. SLOW NUCLEAR PLANT ANALYZER PROGRAM AT INEL. ($1,200K) (FROM $6,400K TO $5,200K)

ACCIDENT EVALUATION	29.9	28.6	- 1.3

- TERMINATE PILOT PROGRAM FOR SEVERE ACCIDENT MANAGEMENT IN BWRS. ($300K) (FROM $3,500K TO $3,200K)
- TERMINATE THE ACRR SEPARATE EFFECTS FISSION PRODUCT RELEASE EXPERIMENTS; EXISTING UNCERTAINTIES WILL REMAIN IN IMPLEMENTATION OF SEVERE ACCIDENT POLICY. ($1,000K) (FROM $11,700K TO $10,700K)

NUCLEAR REGULATORY RESEARCH	FY 1986 PLANNED LEVEL	FY 1986 REDUCED LEVEL	FY 1986 CHANGE FROM PLANNED LEVEL
REACTOR OPERATIONS & RISK	$15.2	$14.2	-$1.0

- TERMINATE DEVELOPMENT OF NEEDED GUIDANCE ON THE EFFECTIVENESS OF PHYSICAL SECURITY SYSTEMS. ($1,000K) (FROM $6,200 TO $5,200K)

WASTE MGMT, EARTH SCIENCES AND HEALTH	12.4	11.7	- 0.7

- INITIATE TERMINATION OF HEALTH EFFECTS & RADIATION PROTECTION WORK. SIGNIFICANT STRETCH-OUT REVISION OF PART 20 AND RELY ON EPA IN AREAS SUCH AS RESIDUAL ACTIVITY FOR DECOMMISSIONING. ($400K) (FROM $2,600K TO $2,200K)

- DEFER SITE SPECIFIC RESPONSE UNTIL FY 1987; DELAY RESOLVING THE EXTENT OF CAPABLE FAULT IN OKLAHOMA UNTIL FY 1987. ($300K) (FROM $5,000K TO $4,700K)

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)
PTS OFFICES

	FY 1986		
PTS OFFICES	PLANNED LEVEL	REDUCED LEVEL	CHANGE FROM PLANNED LEVEL
PS $	5.080	4.780	0.300
ACRS	0.250	0.200	-0.050
• REDUCE ABILITY TO RESPOND TO CERTAIN COMMISSION AND CONGRESSIONAL REQUESTS.			
ASLBP	0.822	0.747	-0.075
• NRC'S TRANSCRIPTION REPORTING CONTRACT SERVICES FOR OTHER THAN COMMISSION MEETINGS AND USE OF PART-TIME ASLBP BOARD MEMBERS WILL BE REDUCED.			
ASLAP	0.010	0.010	0
OI	0	0	0
ELD	0.060	0.060	0
IP	0.010	0.010	0
SP	0.695	0.645	-0.050
• REDUCE ABILITY TO MAINTAIN LIAISON WITH AND PROVIDE TRAINING ASSISTANCE TO STATES.			
AEOD	3.233	3.108	-0.125
• REDUCE CONTRACT SUPPORT FOR SPECIAL STUDIES OF OPERATIONAL EXPERIENCE.			

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)
PDA OFFICES

PDA OFFICES	FY 1986		
	PLANNED LEVEL	REDUCED LEVEL	CHANGE FROM PLANNED LEVEL
PS $	1.875	1.675	-0.200
OCM	0.040	0.040	0
SECY	0.230	0.230	0
OIA	0	0	0
OGC	0.022	0.022	0
OPA	0.010	0.010	0
OPE	0.025	0.025	0
OCA	0.001	0.001	0
EDO	0.050	0.050	0
SDBU/CR	0.375	0.375	0
RM	1.122	0.922	-0.200
• REDUCE RM'S CAPABILITY TO PERFORM COST STUDIES ON PROPOSED NRC REGULATIONS COVERING ENGINEERING, ECONOMIC AND HEALTH CONSIDERATIONS.			
ADM	0	0	0

FY 1986 BUDGET REDUCTIONS
(DOLLARS IN MILLIONS)

	FY 1986		
	PLANNED LEVEL	REDUCED LEVEL	CHANGE FROM PLANNED LEVEL
ADMIN. SUPPORT	$56.5	$53.5	-$3.0

- THE PURCHASE OF ALL MECHANIZED FILING EQUIPMENT WILL BE ELIMINATED. ($75K)
- THE COPY CENTER IN THE WILLSTE BUILDING WILL BE ELIMINATED. CONTRACTED COPYING WILL BE REDUCED. THIS WILL CAUSE DELAYS IN REPRODUCTION WHICH WILL INCREASE TURNAROUND TIME. PEAK WORKLOADS WILL NOT BE PROCESSED IMMEDIATELY. LEAST USED CONVENIENCE COPIERS WILL BE REMOVED. ($185K)(FROM $415K TO $230K)
- REDUCTIONS IN PERSONNEL SECURITY INVESTIGATIONS WILL RESULT IN LONGER "Q" SECURITY CLEARANCE PROCESSING TIMES. THE 35 DAY EXPEDITED INVESTIGATIONS WILL BE LIMITED TO A PROJECTED 10 RESIDENT INSPECTOR CASES. ($110K)(FROM $350K TO $240K)
- MINIMAL CHANGES WILL BE MADE TO THE EXISTING SPACE CONFIGURATION. BECAUSE SPACE CONFIGURATION CANNOT BE ALIGNED FOR OPTIMUM WORK FLOW, THE EFFICIENCY OF EMPLOYEE INTERACTIONS WILL BE REDUCED. CONSTRAINTS AT SOME WORK STATIONS WILL REDUCE THE EFFICIENCY/PRODUCTIVITY OF AFFECTED EMPLOYEES, PARTICULARLY WHEN ORGANIZATIONAL CHANGES ARE EFFECTED. ($100K)(FROM $270K TO $170K)
- THE WORK OF THE TEXT PROCESSING BRANCH WILL BE LIMITED TO DOCUMENTS THAT WILL BE PUBLISHED. ($100K) (FROM $220K TO $120K)
- EXCEPT FOR THE ERGONOMIC FURNITURE TO SUPPORT THE INCOMING DATA AND WORD PROCESSORS, THE PURCHASE OF ALL FURNITURE WILL BE ELIMINATED. ($90K)(FROM $250K TO$160K)
- ELIMINATE THE PURCHASE REPLACEMENT OF CARPET, TABLE LAMPS, DRAPES, ART WORK, ETC. FOR THE SHORT TERM, THIS IMPACT WILL BE MINOR. ($60K)(FROM $95K TO $35K)
- THE ACTUAL COST SAVINGS FROM DCS OPERATIONS WILL BE DETERMINED AFTER THE SCOPE OF DCS FOLLOW-ON STUDY IS FINALIZED. CURRENT PROJECTIONS RANGE FROM ZERO TO $250K. IF AT LEAST $150K CANNOT BE CUT FROM THE DCS FUNDS, THIS REDUCTION WILL BE ALLOCATED TO OTHER ADMINISTRATIVE SUPPORT ITEMS. ($150K)
- REDUCTIONS IN GUARD-SERVICES WILL AFFECT BUILDING ACCESS CONTROLS. IN SOME AREAS (WAREHOUSE, PHILLIPS BUILDING MAILROOM, EAST-WEST TOWERS AND WOODMONT BUILDINGS) NRC PROPERTY WILL NOT RECEIVE THE SAME LEVEL OF PROTECTION PROVIDED IN THE PAST. GENERALLY, THE GUARD FORCE WILL BE SPREAD THINNER, WHICH MAY RESULT IN INCREASED RESPONSE TIMES TO INCIDENCES OR EMERGENCIES. ($120K)(FROM $1,450K TO $1,330K)

Admin. Support (cont)

- Reduction of individual, self-initiated training ($75K); reduction in executive, management and supervisory development new program initiatives resulting from 1985 Needs Assessment ($45K); and reduction in routine administration of training contracts. ($20K)(From $1,779K to $1,639K).
- Lower levels of general Administrative Support services to the agency ($555K) and revised estimates not impacting current operations. ($515K)
- Reduced timesharing will delay development of the Corporate-shared Data Network. Thus the agency will not be able to modernize automated activities as readily as currently planned. ($500K)
- Postpone previously planned additional office space for Region V by six months and planned in-house moves of office furniture and equipment in RV due to delay in acquiring additional office space RV; reduce space alterations in RIII due to uncertainty of acquiring additional space; and revised SLUC estimates in Region I due to delay in Region I move. ($151K)(From $1,362K to $1,211K)
- Purchase currently leased reproduction equipment at some resident sites and defer procurement of general office equipment; revised estimates for purchase of NDE and telecommunications equipment. Reduced service and revised cost estimates in other services such as installation of emergency telecommunication capabilities at resident sites, armored car service for the Imprest Fund, and office cleaning service during work hours. General reduction in supplies and materials. ($149K)(From $466K to $317K)

MR. BEVILL: Provide a summary table showing employment levels for the agency in the same format that appears in House Report 99-195 on page 8.

CHAIRMAN PALLADINO: With your permission, I will provide that information for the record.

(The information to be provided follows:)

SUMMARY TABLE: NRC EMPLOYMENT LEVELS

	FY 85			FY 86			FY 87 PROPOSED		
AGENCY	FED	NON FED	TOTAL	FED	NON FED	TOTAL	FED	NON FED	TOTAL
NRC	3,498	0	3,498	3,491	0	3,491	3,369	0	3,369

MR. BEVILL: Provide a summary table showing the breakdown of appropriations by capital and operating expenses in the same format that appears in House Report 99-195 on page 7.

CHAIRMAN PALLADINO: With your permission I will provide that for the record.

(The information to be provided follows:)

OPERATING AND CAPITAL EXPENDITURES--FISCAL YEAR 1987 ENERGY AND WATER DEVELOPMENT BILL

U.S. NUCLEAR REGULATORY COMMISSION

	FISCAL YEAR 1987
OPERATING EXPENSES	$405,000,000
CAPITAL AND CONSTRUCTION	-0-
TOTAL	$405,000,000

MR. BEVILL: Provide a summary table showing the prior three years estimated outlays and actual outlays, by appropriation account and a table showing the FY 1987 budget authority request and outlays associated with that request for the next five years. Provide this by appropriation account.

CHAIRMAN PALLADINO: With your permission, I will provide that information for the record.

(The information to be provided follows:)

A SUMMARY TABLE SHOWING ESTIMATED AND ACTUAL OUTLAYS FOR NRC IS LISTED AS FOLLOWS:

U.S. NUCLEAR REGULATORY COMMISSION

SALARIES AND EXPENSES

(DOLLARS IN MILLIONS)

FY	BUDGET AUTHORITY REQUEST	OUTLAYS ESTIMATED	ACTUAL
1984		$450	$462
1985		451	468
1986		442	
1987	$405	255	
1988		122	
1989		24	
1990		4	

NOTE: THE OUTLAYS LISTED FOR FY 1987 AND BEYOND REPRESENT OUTLAYS FOR FY 1987 FUNDS ONLY.

QUESTIONS OF MR. MYERS

MR. MYERS: There is a lot of discussion about "inherently safe" reactors such as the gas-cooled reactor, liquid metal fuel reactors, and others. In your view would any of these alternatives be more licensable than a light water reactor?

CHAIRMAN PALLADINO: We use the term "inherently safe reactors" to mean those reactor designs which make more use of passive features to accomplish their safety functions. These safety functions are, however, generally the same regardless of reactor type (i.e., shutdown the reactor, remove decay heat and contain radioactive material). The use of passive features tends to reduce or eliminate the need for active components, supporting systems or operator actions to assist in accomplishing these safety functions and thus has the potential for achieving high reliability in the safety systems of those plants utilizing inherent features. In addition, the inherently safe concepts also tend toward the reactor having a slower response time during transients which gives operators a longer time to restore conditions to normal before exceeding any operational or safety limits.

With the use of inherent features to accomplish safety functions we would expect plants to be better able to demonstrate that the required safety functions can be accomplished in a highly reliable fashion and in this context may have an advantage over current generation light water reactor designs in demonstrating compliance with NRC regulations. However, it should be emphasized that many of these reactor designs are still in the conceptual stage; therefore, this conclusion is dependent upon the performance of the design being validated.

MR. MYERS: Has the nuclear power industry taken any steps toward standardizing plant design in order to streamline the licensing process? Have you worked with the industry to develop a standard plant design?

CHAIRMAN PALLADINO: Currently the staff has three reviews ongoing for standard plant design: General Electric's GESSAR II, Westinghouse's RESAR-SP/90 and Combustion Engineering's CESSAR-F. The GESSAR II design has been reviewed to the severe accident concerns identified in the Commission's severe accident policy statement. A decision on the issuance of a severe accident amendment to the GESSAR II Final Design Approval is scheduled for FY 1986.

In related areas, we have underway a cooperative program with EPRI to develop and review a requirements document which can be used by industry to develop standardized advanced pressurized water and boiling water-light water reactor designs. This may be followed by our review of actual designs produced using this requirements document.

The Commission has received the AIF position on standardization and it is being considered in Commission deliberations on the pending Standardization Policy Statement.

MR. MYERS: What disciplinary actions have you taken with the TVA in the past two years?

CHAIRMAN PALLADINO: Although the NRC does not take "disciplinary actions" against a facility or licensee, the NRC does have enforcement authority to issue orders and to assess civil penalties for significant violations of NRC requirements. With your permission, I will provide for the record a listing of the significant enforcement actions issued to TVA during the past two years.

(The information to be provided follows:)

TVA ENFORCEMENT ACTIONS

BROWNS FERRY

MARCH 7, 1984	$40,000	ONE VIOLATION INVOLVING THE FAILURE OF SECURITY FORCE PERSONNEL TO ADHERE TO ESTABLISHED PROCEDURAL REQUIREMENTS.
MAY 11, 1984	$60,000	FOUR VIOLATIONS INVOLVING IMPROPER REACTOR SHUTDOWN CONTRARY TO TECHNICAL SPECIFICATION AND STATION PROCEDURES. THESE VIOLATIONS RELATED TO A FAILURE TO ADHERE TO 10 CFR 50.59 REQUIREMENTS AND THE FAILURE OF A LICENSED OPERATOR TO PROPERLY ENFORCE CONTROL ROD GROUP LIMITS WHEN THE ROD WORTH MINIMIZER WAS INOPERABLE.
JULY 13, 1984	ORDER	THIS ORDER WAS ISSUED TO CONFIRM COMMITMENTS DESCRIBED IN THE BROWNS FERRY REGULATORY IMPROVEMENT PROGRAM.
JULY 20, 1984	$120,000	THREE VIOLATIONS INVOLVING FAILURES TO PROMPTLY IDENTIFY AND CORRECT CONDITIONS ADVERSE TO QUALITY REGARDING THE SCRAM DISCHARGE INSTRUMENT VOLUME AND DIESEL GENERATOR HEAT EXCHANGERS, FAILURES TO MAKE REQUIRED REPORTS TO THE NRC, AND FAILURE TO PERFORM A REQUIRED FUNCTIONAL SURVEILLANCE TEST.
DECEMBER 5, 1984	$50,000	A VIOLATION INVOLVING SEVERAL EXAMPLES OF A FAILURE TO INSTALL VITAL AREA BARRIERS AND IMPLEMENT ACCESS CONTROL MEASURES AROUND VITAL EQUIPMENT.
JANUARY 28, 1985	$100,000	SEVEN VIOLATIONS RELATING TO A CORE SPRAY OVERPRESSURIZATION INCIDENT. THIS INCIDENT OCCURRED WHEN WORKERS WERE TESTING THE LOW PRESSURE CORE SPRAY SYSTEM VALVES WHILE THE REACTOR WAS OPERATING AT 100% POWER. BECAUSE ONE VALVE HAD BEEN IMPROPERLY REBUILT, AND BECAUSE IT WAS ERRONEOUSLY OPENED, REACTOR COOLANT (1200PSI) BACKFLOWED INTO THE LOW PRESSURE CORE SPRAY SYSTEM. FIRE ALARMS WERE TRIGGERED, A PUMP SEAL WAS BLOWN OUT, AND THIRTEEN PEOPLE RECEIVED MINOR SKIN CONTAMINATION.

FEBRUARY 27, 1985	$112,500	FOUR VIOLATIONS INVOLVING FAILURES TO SATISFY SPECIFICATIONS AND PROCEDURAL REQUIREMENTS DURING A REACTOR STARTUP ON OCTOBER 22, 1984.
MAY 16, 1985	$50,000	A VIOLATION IN WHICH VITAL EQUIPMENT WAS NOT AFFORDED THE LEVEL OF PROTECTION SPECIFIED IN THE PHYSICAL SECURITY PLAN.
JULY 22, 1985	$150,000	VIOLATIONS INVOLVING REACTOR VESSEL WATER LEVEL ANOMALIES THAT OCCURRED DURING A REACTOR STARTUP ON FEBRUARY 13, 1985.

SEQUOYAH

MAY 7, 1985	$112,500	THREE VIOLATIONS IDENTIFIED AS A RESULT OF A SEAL TABLE LEAK AND THIMBLE TUBE EJECTION EVENT.
JUNE 14, 1985	ORDER	AN ORDER MODIFYING LICENSE EFFECTIVE IMMEDIATELY WAS ISSUED TO TVA OPERATING REACTORS AFTER A BREAKDOWN IN MANAGEMENT CONTROLS FOR EVALUATING AND REPORTING POTENTIALLY SIGNIFICANT SAFETY CONDITIONS WAS IDENTIFIED. THE ISSUE INVOLVED THE FAILURE TO REPORT AND TO EVALUATE IN A TIMELY MANNER POTENTIALLY SIGNIFICANT DEFICIENCIES IN UNITS 1 AND 2 CONTAINMENT PRESSURE TRANSMITTERS.

WATTS BAR

AUGUST 29, 1985	$100,000	MATERIAL FALSE STATEMENTS MADE WITH REGARD TO CONTROL ROOM MODIFICATIONS.

MR. MYERS: In the NRC view, were there any causes of TVA's nuclear plant problems that could be traced to one explanation or were they all isolated, coincidences?

CHAIRMAN PALLADINO: While numerous problems have been identified with TVA's nuclear power program, the one underlying cause, either directly or indirectly, at TVA was the lack of effective management control and resultant lack of an overall disciplined approach to safety. This lack of effective management control resulted in identified problems going uncorrected, a general lack of commitment to and responsibility in achieving excellence in performance, and eventually the loss of a working environment built on trust and confidence.

Mr. MYERS: Have any of your actions against TVA, or any utility, been challenged in court?

CHAIRMAN PALLADINO: TVA has challenged in court one NRC enforcement action. Other utilities have challenged NRC enforcement actions in three cases. The cases are as follows:

Tennessee Valley Authority v. NRC, No. 177-35 (E.D. Tenn., 1977), TVA sought a declaratory judgment that NRC lacked the authority to issue a 1977 order requiring TVA to cease and desist from removing structures from the Phipps Bend Site without prior NRC approval. The court dismissed the complaint.

Virginia Electric Power Co. v. NRC, 571 F.2d 1289 (4th Cir. 1978), challenged NRC imposition of a civil penalty for a material false statement. The court affirmed the penalty.

Niagara Mohawk Power Corp. v. NRC, No. 81-4009 (2d Cir. 1981), involved an order removing a plant manager. A settlement was reached.

Consolidated Edison Co. of New York v. NRC, (S.D.N.Y. June 9, 1982), involved a challenge to a civil penalty of $210,000. The case was settled for $185,000.

QUESTIONS OF MRS. BOGGS

MRS. BOGGS: Would you please discuss the operating experience to date for the Waterford-3 facility. How would you characterize this experience in comparison to other facilities?

CHAIRMAN PALLADINO: We routinely perform reviews and systematic assessments of licensee performance (SALP) at operating plants and compare performance among recently licensed plants. The most recent SALP rating for Waterford, covering the period of December 1984 to December 1985, had varied ratings from one to three. The ones were in the areas of preoperational/startup testing and, security and safeguards. The threes were in the areas of plant operations and maintenance. In addition, some aspects of experience at Waterford-3 were recently compared with that of similar plants in a survey of five recently licensed plants designed by Combustion Engineering. The survey covered the period of time from the issuance of the full power operating licence (March 1985) to the time of commercial operation (September 1985). The results of the survey showed that of the plants surveyed, Waterford-3 had higher frequency of reactor scrams. In the staff's preliminary review of reactor scrams for 1985, Waterford-3 was found to be among the plants with the largest number of scrams.

MRS. BOGGS: Are there any outstanding safety issues related to the licensing or operation of the Waterford plant? If so, please discuss.

CHAIRMAN PALLADINO: There are no outstanding safety issues related to the licensing or operation of Waterford 3. All outstanding safety issues were closed at the time of full-power license issuance on March 16, 1985 and no new safety issues have arisen during the first year of operation. However, similar to other operating reactors, there are routine licensing actions outstanding.

MRS. BOGGS: Would you please discuss the operating experience to date for the Grand Gulf facility. How would you characterize this experience in comparison to other facilities?

CHAIRMAN PALLADINO: In the most recent SALP rating, covering the period of October 1985 to April 1985, Grand Gulf-1 had varied ratings from one to three. The one was in the area of security and safeguards, and the three's were in the areas of emergency preparedness, quality program and administrative controls, and licensing activities.

As with other plants in the same phase of operations, Grand Gulf operating experience indicates strong areas and areas needing improvement. Some aspects of operating experience at Grand Gulf-1 were recently surveyed for the last 8 months of 1985 and compared with that of other similar recently licensed plants. Results indicate that the frequency of reactor scrams and actual Engineered Safety Feature (ESF) challenges have been higher than average. In addition to this, the number of significant events caused by personnel error is higher than average. In contrast, we found the overall frequency of reported events to be typical for plants of this age.

MRS. BOGGS: Are there any outstanding safety issues related to the licensing or operation of the Grand Gulf I plant? If so, please discuss.

CHAIRMAN PALLADINO: There are several conditions in the Grand Gulf, Unit 1 operating license which require the resolution of safety issues that were outstanding at the time the operating license was issued. These conditions require test results, analyses, or equipment modifications by certain dates, usually the first refueling outage. The licensee has completed some of the requirements and has planned for fulfillment of most of the other conditions by the dates specified. Deferral of the completion dates for some of the license conditions has been proposed by the licensee. One of the requirements which is also applicable to similarly designed plants, submittal of an analysis to confirm the adequacy of the installed hydrogen control system, will require substantial effort for completion. The licensee of Grand Gulf, Unit 1 and the owners of three other Mark III Containment plants, have formed a Hydrogen Control Owners Group (HCOG) to perform the requisite tests and analyses on a generic basis to demonstrate compliance with the requirements of 10 CFR 50.44 "Standards for Combustible Gas Control System in Light Water Reactors." The licensee for Grand Gulf, Unit 1 has estimated that a submittal based on the HCOG generic results will be made in June 1987.

MRS. BOGGS: What is the status of the construction and licensing of the River Bend facility? Are there any outstanding safety issues relating to the licensing application of the operator of this plant?

CHAIRMAN PALLADINO: With your permission, I will provide that information for the record.

(The information to be provided follows:)

RIVER BEND STATUS

(A) CONSTRUCTION STATUS. THE FOLLOWING ITEMS REMAIN TO BE COMPLETED.

- CONTROL ROD DRIVE MAINTENANCE FACILITY (BY FIRST REFUELING OUTAGE)
- FUEL BUILDING SAMPLING SYSTEM (BY FIRST REFUELING OUTAGE)
- ELEVATORS IN AUXILIARY CONTROL (BY FIRST REFUELING OUTAGE).

(B) LICENSING STATUS. ON NOVEMBER 20, 1985, THE NUCLEAR REGULATORY COMMISSION ISSUED OPERATING LICENSE NPF-47, TO GULF STATES UTILITIES AS THE OPERATOR OF RIVER BEND STATION. OPERATING LICENSE NPF-47 PERMITS OPERATION UP TO 2894 MEGAWATTS THERMAL (100% RATED POWER). THIS LICENSE INCLUDES ABOUT 15 LICENSE CONDITIONS WHICH REQUIRE VARYING AMOUNTS OF LICENSEE AND STAFF RESOURCES FOR ULTIMATE RESOLUTION.

(C) OUTSTANDING SAFETY ISSUES. THE RIVER BEND SAFETY EVALUATION REPORT, SUPPLEMENT NO. 5 (SSER 5) ISSUED AT THE TIME OF THE FULL POWER LICENSE (NOVEMBER 1985) IDENTIFIED THE FOLLOWING OUTSTANDING SAFETY ISSUES:

- INSERVICE TEST PROGRAM (RESOLVE 8/29/87).
- HYDROGEN CONTROL - DEGRADED CORE ACCIDENT (RESOLVE BY FIRST

REFUELING OUTAGE). SSER5 ALSO IDENTIFIED THREE ISSUES WHICH WILL REQUIRE FURTHER ATTENTION BY THE LICENSEE AND THE STAFF TO ACHIEVE RESOLUTION:

- CONTAINMENT VENTING (ADDITIONAL INFORMATION REQUIRED 8/1/86).
- TURBINE SYSTEM MAINTENANCE PLAN (11/1/87).
- SAFETY PARAMETER DISPLAY SYSTEM (CURRENT RESOLUTION SCHEDULE SUMMER 1986).

MRS. BOGGS: Please discuss the impact of Gramm-Rudman on the Commission. Has there been any material impact on the Commission's safety mission?

CHAIRMAN PALLADINO: An FY 1986 reduction of $18 million almost half-way through the fiscal year, and in addition to an FY 1986 appropriation reduction of $11 million, will have a significant impact on the programs necessary to support NRC's regulatory responsibilities. The Congress and the public must recognize that with these reduced resource levels, the NRC will be performing less regulatory oversight, not more. However, we do not believe this reduction will prevent the Commission from fulfilling its statutory responsibilities. For the future, although the Commission fully intends to discharge its responsibility to protect the public health and safety, potential FY 1987 budget reductions may result in significant deterioration in the NRC's ability to fulfill its mission.

MR. ASSELSTINE: I believe that the FY 1986 reductions, including those imposed by Gramm-Rudman, together with OMB reductions to our FY 1987 budget request, are already sufficient to adversely affect the Commission's ability to assure adequate protection of the public health and safety.

MRS. BOGGS: What type of resources will the Commission likely require in order to meet the mandate of the Low-Level Waste Act Amendments?

CHAIRMAN PALLADINO: The Low-Level Radioactive Waste Policy Amendments Act of 1985 represents a major modification to the management of low-level radioactive waste. The Act does not change the basic mission of the Nuclear Regulatory Commission to ensure the protection of the public health and safety through a thorough, technically sound licensing process with public participation. The Act does, however, place new time constraints on states and compacts that will affect NRC resource requirements. Among other things, the Act also requires NRC to develop: procedures for granting emergency access to disposal sites; technical guidance for alternatives to shallow land burial; and procedures for reviewing petitions to exempt waste streams of low concentrations and activity as being below NRC regulatory concern.

The NRC's Office of Nuclear Material Safety and Safeguards has established a task force to assess the impact of the Act on current NRC low level waste program priorities and resource requirements. NRC was already working on some of the activities required under the new law at the time of its enactment. The plans developed by the task force will enable the NRC to estimate the additional resources, if any, that would be necessary to comply with the task force report should be completed by May, 1986.

NRC is concerned that mixed waste regulatory uncertainties resulting from the evolving nature of the RCRA regulations could threaten the timely implementation of milestones in the Low Level Radioactive Waste Policy Amendments Act. If states are required to design their low-level waste facilities to meet RCRA for the disposal of mixed waste, the uncertainty surrounding the RCRA requirements could delay the Congressionally mandated development of new licensed low-level radioactive waste disposal capacity.

MRS. BOGGS: What is the status of the Commission's efforts to hire and promote qualified women and minorities for positions of managerial and technical responsibility?

CHAIRMAN PALLADINO: We are making progress. The representation of women and minority employees has risen at grade 11 and above, even while budget constraints and position control activities have resulted in a 2 percent decrease in the agency's permanent full-time workforce.

The number of women employees in the agency remained steady, decreasing only from 1071 to 1068. Because of the decrease in the agency's workforce, the representation of women in the agency actually rose, from 31.6 percent to 32.1 percent. At grades 11 and above, the agency's 2 percent decrease compares to 2 percent increase for women.

Minority employees increased one percent against the agency's two percent loss and also increased one percent in the grades 11 and above category against the agency's two percent loss there. It is also significant that in every case except one, where a decrease is shown for women or minority employees in a particular grade, the decrease is appreciably smaller than the agency's loss at the grade. The lone exception is at grade 15, where minority employees' numbers dropped five percent against an agency decrease of four percent. This is partially offset by minority employees' gain at grade 16 against the agency's three percent loss at that grade.

MR. ASSELSTINE: I support the initiatives recently implemented by the NRC staff to hire and promote qualified women and minorities to positions of managerial and technical responsibility. However, progress has been painfully slow. Further, because the agency will be shrinking rather than expanding in the future, additional progress may be difficult. The Commission must not let budgetary constraints dampen its enthusiasm for expanding the representation of women and minorities in managerial positions.

MRS. BOGGS: Please discuss the goals and accomplishments of your Federal Women's Program and other minority programs.

CHAIRMAN PALLADINO: During FY 1986 the Federal Women's Program Manager met with the Regional Administrators and Office Directors and their staff members, providing guidance and assistance aimed at improving employment opportunities for NRC women.

In conjunction with the Federal Women's Program Advisory Committee, the program sponsored awareness programs and conducted Lunch and Learn programs for all employees, addressing such issues as SF-171 Preparation, Networking, Mentoring, Why Should I Hire You, Interviewing Techniques, A Man's View of the Women's Program, Time and Stress Management, and more.

The Federal Women's Program assisted the personnel office in recruitment activities by personally participating in job fairs, recommending participation and suggesting recruiting areas that could produce more minorities and women.

The Federal Women's Program provided individual counseling to women concerning child care, career planning, performance, and other issues affecting their employment.

The Federal Women's Program developed, published, and provided Federal Women's Program brochures to the personnel office for use in the orientation packet. These brochures were distributed to all regions and are given to all new women employees.

All complainants with active discrimination complaints were contacted in order to discuss the status of their cases.

Underrepresentation determinations were prepared for professional occupations with 50 or more incumbents.

Hiring goals for minorities and women were established and transmitted to Office Directors and Regional Administrators.

An Hispanic Employment Program Manager and Black Affairs Coordinator were appointed on a collateral basis.

The FY85 Affirmative Action Plan was prepared and submitted to the EEOC.

In FY 1986, we seek to continue progress made in FY 85. Emphasis will be placed on communicating EEO and affirmative action goals to top agency managers and working with these managers to formulate realistic EEO goals for each headquarters office and region.

We have taken steps to increase management accountability for achieving EEO and affirmative action results. EEO initiatives have now been included in the operating plans of office directors and regional administrators. This year we plan to ensure EEO performance is factored into the appraisals of all NRC Supervisors.

Finally, I would note that the Commission has approved consideration of a day care center for NRC headquarters for the second building if and when consolidation takes place.

MRS. BOGGS: How would you assess your upward mobility program for women and minorities already on the Commission's staff?

CHAIRMAN PALLADINO: Our upward mobility program has been reemphasized during the past two fiscal years. During FY 1985, a total of seven upward mobility positions were established and filled. Our goal for FY 1986 is to fill 15 upward mobility positions. Thus far in FY 1986 we have identified ten vacancies to be filled via the upward mobility program.

MRS. BOGGS: Last year, one of the final issues involved in the Waterford Licensing Review was an investigation of the Quality Assurance Program involved in the construction of the facility. Has that investigation been concluded?

CHAIRMAN PALLADINO: All field work has been completed. The draft report has been prepared and is currently at OI headquarters.

MRS. BOGGS: What about the allegations of wrongdoing that were under review by the Office of Investigations?

CHAIRMAN PALLADINO: All field work has been completed on this investigation as well. The report is now under review.

MRS. BOGGS: What were the findings of these two investigations and what were the implications of these findings on the safety of the operations of the Waterford plant?

CHAIRMAN PALLADINO: The Office of Investigations (OI) has completed all field work on a total of three investigations related to Waterford. These include the two investigations just mentioned. Draft reports of investigation have been prepared and are currently at OI Headquarters awaiting review. This review, however, regrettably has not yet been completed due to the assignment of limited resources to higher priority projects. OI maintained close contact with the NRC Waterford Task Force throughout the investigations to ensure that the Staff remained aware of the safety implications of the information gathered to date. However, the final evaluation of the safety implications of the findings of these investigations can only be done by the NRC staff after they have been afforded the opportunity to review the final OI reports. It is my understanding that OI is supposed to keep the staff currently informed of any information which allegedly bears on safety. As of now, we are not aware of any implications for the safety of Waterford.

MRS. BOGGS: I understand a solution to the Headquarters dispersal problem is close at hand. What is the status of your discussions with the General Services Administration on resolving this problem?

CHAIRMAN PALLADINO: The General Services Administration is currently pursuing a purchase option on a building in Rockville, Maryland, that could house approximately 60 percent of the NRC Headquarters staff. Future acquisition of a second building on or near the site of the first building is also being considered.

GSA has requested that specific questions regarding status of the negotiations and subsequent procurement activities be referred to the National Capital Regional Office of GSA.

QUESTIONS OF MR. WATKINS

MR. WATKINS: I am deeply concerned about the recent uranium hexafluoride incident that occurred at the Kerr-McGee Sequoyah facility in Oklahoma. Please give a detailed explanation of what actions the NRC has taken thus far to investigate this incident, what determinations have been made concerning the incident, and what regulatory changes are being considered by the NRC as a result of this incident.

CHAIRMAN PALLADINO: Immediately following the accident, an NRC Augmented Investigation Team (AIT) conducted an investigation into the cause of the event. In addition, an NRC team inspection was conducted in late February. The inspection team conducted a comprehensive review of licensed activities. While all enforcement actions have not yet been determined, it appears that the findings of the AIT and the team inspection will show a number of violations of regulatory requirements. The Augmented Investigation Team report was published on March 13, 1986.

A number of other follow-on actions have been initiated to gather information and address the issues that were raised.

An Ad Hoc Interagency Public Health Assessment Task Force was formed to assess the non-radiological and radiological effects of the accident. The health effects report was published on March 24, 1986.

A Lessons Learned Group has been formed to review the staff reports and assess the steps that NRC might reasonably take to prevent similar accidents from occurring, NRC's role in licensing and inspecting plants of this type and the adequacy of the NRC response to the accident and follow-up actions. The lessons learned effort will follow the investigations, with a report expected in April 1986.

The regulatory changes that are being considered by the Commission include the rule on emergency preparedness that was under development before the Sequoyah incident. Additional needed regulatory changes may be identified by the Lessons Learned Group in their deliberations or from the other follow-up actions, including inspections, that the Commission is conducting in response to the Sequoyah incident.

QUESTIONS OF MR. FAZIO

MR. FAZIO: Which different nuclear technology options has the NRC under generic licensing review?

CHAIRMAN PALLADINO: The NRC currently has under generic review several nuclear technology options for power reactors. GESSAR, the General Electric standard plant boiling water reactor (BWR) design, is considered an evolutionary change from existing BWRs designs. RESAR (SP/90), the Westinghouse standard plant pressurized water reactor (PWR) design, is considered an evolutionary change from existing PWR designs. EPRI-ALWR, the Electric Power Research Institute Advanced light water reactor, is in the initial stages of development and will consist of joint NRC/EPRI development over the next 3-4 years of a requirements document from which an advanced BWR or PWR could be designed. The high temperature gas-cooled reactor, being sponsored by the Department of Energy and Gas Cooled Reactor Associates, represents an innovative change from previous U.S. HTGR designs.

Finally, two liquid metal reactor designs are being sponsored by the Department of Energy. One design is by General Electric and is called PRISM (Power Reactor Inherently Safe Module) and the other is by Rockwell International called SAFR (Sodium Advanced Fast Reactor). These designs represent innovative changes from previous U.S. LMR designs.

At the present time our review of the advanced HTGR and LMRs is proceeding at a lower level of effort from that requested by the Department of Energy, due to FY 1986 and FY 1987 budget constraints.

MR. BERNTHAL: I would like to see the Commission make a firm commitment to review advanced reactors and standardized designs as the need arises.

MR. FAZIO: Are you expecting to take on review of any others?

CHAIRMAN PALLADINO: We have no plans at the present time to take on generic reviews of additional nuclear technology options. If requested to do so in the future, we will consider each request in light of our available resources and other priorities.

MR. FAZIO: Please describe the NRC's objectives when reviewing a technology for generic licensing?

CHAIRMAN PALLADINO: The NRC objectives for generic licensing or for standard plant application as we usually refer to it are essentially the same as for individual plants with respect to scope and content of the review. This safety review is based on the regulations as further detailed in the Standard Review Plan and the referenced Regulatory Guides. The Standard Review Plan and Regulatory Guides are specifically directed at the review of light water reactors but much of the material is applicable to reactors based on other technologies such as liquid metal or gas-cooled reactors. New criteria are derived with a similar basis for those parts of the Standard Review Plan that are strictly applicable only to light water reactors.

MR. FAZIO: Do you set any qualitative requirements which the technologies' proponents must meet, such as "small" or "modular" or "inherently safe" or "economically feasible" or "industrially supported?" Or do you restrict yourselves to considerations only of safety and leave these other matters to the marketplace?

CHAIRMAN PALLADINO: The NRC has no generic requirements regarding size, modular construction, economic feasibility or industrial support. We do restrict our review to considerations of safety alone.

MR. FAZIO: We consistently strive to achieve uniformity of design as a means of simplifying the licensing process. What does the NRC do to encourage simplicity and consistency of design?

CHAIRMAN PALLADINO: With regard to consistency of design, the NRC has encouraged standardization since 1972. In the development of a new standardization policy, the NRC will emphasize certification of essentially complete designs. It is planned that a Final Design Approval that has been approved through rulemaking will be issued for a period of 10 years. During this 10-year period all NRC changes to the certified design must be supported with the finding required in 10 CFR 50.109(c), that there is a substantial increase in the overall protection of the public health and safety or common defense and security, and that the costs are justified in view of the increased protection.

MR. FAZIO: Can it influence the number and variety of design options so that we choose some, or are we constantly embarked on a course to improve the product?

CHAIRMAN PALLADINO: The staff expects a limited number of certified design options to be available to choose from, in part, due to the rigors of the certification process and to the 10 year length of the certified design approval.

The staff favors simplicity and consistency of design as long as the NRC's safety requirements are satisfied.

MR. FAZIO: What do you see as necessary before orders for nuclear plants will pick up again?

CHAIRMAN PALLADINO: We understand that reserve capacities among domestic utilities are approaching 40 to 50% in many parts of the country, significantly above the accepted industry average of 15-20%. Once reserves begin to drop (with normal economic growth and capital replacement) and approach 15%, utility planners will reevaluate their capacities to ensure that further drops in reserve capacity does not jeopardize system reliability. For many utilities, this critical drop in capacity is projected for the mid to late 1990's and could necessitate new plant construction in the late 1980's and early 1990's.

Once utility planners have made the decision to build new plant capacity, they must decide which type of capacity - nuclear, coal, oil or gas - to build. In the past, large baseload capacity has either been coal or nuclear with the utility's proximity and access to coal being the deciding factors. Coal and nuclear are still comparable options. For the utility planner to choose nuclear, we believe that interest rates, public opinion and regulatory stability will all play significant roles in the decisionmaking process. The NRC does not control interest rates or the public's opinion of the nuclear option. However, the Commission's efforts in standardization, one-step licensing and backfitting will significantly reduce regulatory uncertainty for the next generation of nuclear plants.

MR. FAZIO: Will load growth in the future be met in small increments or large ones?

CHAIRMAN PALLADINO: To meet future load growth, a utility's choice between large or small baseload capacity depends on several key factors. Some utility planners may opt for smaller (500-600 mw) baseload power plants (coal or nuclear) because of the shorter construction schedules and lower capital carrying charges (primarily interest) associated with smaller projects. On the other hand, utilities may opt for the scale economies of production characteristic of the larger baseload (900-1200 mw) power plants.

MR. FAZIO: And is the size of current options the source of nuclear difficulties? Or is it declining load growth? Or public fears?

CHAIRMAN PALLADINO: The "nuclear difficulties" associated with the domestic nuclear power industry are probably attributed largely to the hyperinflationary period from the late 1970's to the early 1980's. Many of the domestic utility companies were in the midst of sizeable construction programs during this period and many were committed to nuclear power. The size of the nuclear plants, which are highly capital intensive projects, did exacerbate many utilities' fiscal problems associated with the drastic rise in interest rates during this period.

The leveling off of load growth over the past few years does not appear to have specifically affected nuclear capacity--only insofar as many of the plants under construction during this period were nuclear. The nuclear plants were hit coincidentally by the leveling off of load growth.

MR. FAZIO: The Congress needs to renew the Price-Anderson Act by August 1987. Many alternatives exist, including one of your own. In recent months, however, what is termed a casualty crisis has hit many sectors of our lives and economic activities. Even where limits on liability exist, in fact, insurance companies have declined to write policies, on grounds that the risks are so uncertain that it is difficult to set premiums. Has this problem complicated the insurance difficulties already facing the nuclear industry?

CHAIRMAN PALLADINO: It is our understanding that the insurance crisis you have described has, to a limited extent, affected the nuclear insurance pools who provide nuclear liability insurance that constitutes the first layer of financial protection for utilities under the Price-Anderson Act. The nuclear insurance pools are the vehicle for accumulating the capacity that is made available through the domestic and foreign insurer participants in the pools. These participants are stock and mutual casualty and property insurance companies with a majority of the pool capacity coming in recent years from foreign participants. A few years ago the pools believed that by 1986 they would have been able to increase their total capacity for the first layer of nuclear liability insurance from $160 million to $200 million. To date, the pools have not found it possible to accomplish the increase and they attribute this to a major extent on the general depressed condition of the world-wide casualty insurance market. We are not aware of any other impact on nuclear insurance carried by utilities brought about by the general insurance crisis.

MR. FAZIO: Have any utilities been in danger of losing insurance?

CHAIRMAN PALLADINO: We do not know of any utilities being in danger of losing insurance.

MR. FAZIO: Can you give me an understanding please of the issues facing the Rancho Seco Nuclear Power Plant responsible for delays in bringing the plant back on line?

CHAIRMAN PALLADINO: The NRC staff's evaluation of the circumstances related to the December 26, 1985 overcooling transient concluded that the underlying causes of the event were design weaknesses and vulnerabilities in a nonsafety-related control system, called the integrated Control System (ICS), and in equipment controlled by the ICS. The ICS is the system that coordinates the action of a variety of plant equipment to make the adjustments necessary to match power generated to power demanded.

Specifically, we have identified plant mechanical, electrical and control systems deficiencies; programmatic issues that contributed to the event (including deficiencies in plant maintenance, testing and surveillance, training and operator performance, plant normal and emergency procedures, and human engineering aspects of plant design); and retrospective issues related to the event (including an assessment of the utility's response to earlier transients in other Babcock & Wilcox designed plants).

These issues, and other related issues, are discussed in more detail in the Incident Investigation Team's (ITT) report, NUREG-1195, Loss of Integrated Control System Power and Overcooling Transient at Rancho Seco on December 26, 1985.

MR. FAZIO: Rancho Seco's outage is costing SMUD ratepayers over $7 million a month. In addition, it is giving the Pacific Gas and Electric Company arguable grounds to claim it need not pay SMUD about $2 million per month in capacity charges. This hefty drain on SMUD's resources is truly painful. When do you see the issues at stake being resolved?

CHAIRMAN PALLADINO: The NRC staff has identified a significant number of issues which must be addressed prior to the restart of the Rancho Seco Nuclear Generating Station. Accordingly, the staff is developing an action plan for resolution of the identified issues. That action plan should be completed by mid-April. Many of these issues have been discussed with the licensee. SMUD is in the process of developing its recovery plan for the plant. Members of the NRC management and staff were briefed on the status of SMUD's recovery plans on March 24-25, 1986 at the Rancho Seco site. SMUD projects that its recovery plan will be available by the end of April. The staff plans to issue a safety evaluation report based on its review of the licensee's implementation of its recovery plan. The Commission may be briefed by SMUD and the staff prior to a restart decision. At this time, we cannot project a date for a restart decision. It should be pointed out that the present situation at SMUD is the culmination of many years of marginal performance. Last year Rancho Seco was identified as one of six plants with many significant issues outstanding for an extended period of time.

MR. FAZIO: To what extent are the problems at Rancho Seco generic difficulties for the operators of Babcock and Wilcox Plants?

CHAIRMAN PALLADINO: On January 8, 1986, the NRC staff met with Babcock and Wilcox Owners Group (B&WOG) Regulatory Response Group to discuss the generic implications of the December 26, 1986 Rancho Seco event. The Regulatory Response Group (RRG) presented information to demonstrate that the other B&W plants are sufficiently different in control system designed responses such that the transient that occurred at Rancho Seco would not be as severe at the other plants.

MR. FAZIO: Have you established any preventative programs to handle these generic matters?

CHAIRMAN PALLADINO: The NRC staff agreed with the RRG's conclusion; however, the NRC requested the B&W Owners' Group to (1) continue efforts to develop an understanding of the root cause of the Rancho Seco transient; (2) review the various types of integrated control system and non-nuclear instrumentation electrical malfunctions and failures that can lead to problems such as the Rancho Seco transient; and (3) conduct near-term training to make all operators of B&W plants aware of the Rancho Seco transient and to review the required actions for dealing with a similar event.

This training was completed by February 5, 1985 for all plants that are operating and will be completed for other plants prior to restart (e.g. Davis-Besse and Crystal River 3). B&W Owners' Group has undertaken a program to perform additional review of the Rancho Seco event to identify actions to be taken by B&W Owners' Group members to reduce the frequency and magnitude of transients.

At this time, we are unsure if the other problems and weaknesses are generic to the other B&W plants. Part of the generic B&W reevaluation will determine if these issues are generic and the appropriate corrective measures.

The NRC has initiated a broader evaluation of B&W designed reactors. By letter dated January 24, 1986 addressed to the B&W Owners Group, the staff stated that a number of recent events at B&W reactors have reinforced staff concerns regarding these designs and lead the staff to conclude that there is a need to reexamine the basic design requirements for B&W reactors. In a meeting with the NRC staff on February 5, 1986 and confirmed by letter dated February 13, 1986, the B&W Owners Group stated that they will take the lead in a planned effort to define concerns relative to the frequency of reactor trips and the complexity of post-trip responses in B&W plants and provide for implementation of resolutions of these concerns as appropriate in all affected B&W operating plants. The B&W Owners Group stated that they intend to work interactively with the NRC on the development of this plan. The B&W Owners Group is scheduled to meet with the NRC staff on April 8, 1986 to review the first draft of the plan.

MR. FAZIO: To what extent in your judgment might retrofitting nuclear plants solve immediate difficulties but create such a confusing pastiche of controls wrapped around controls that in the overall nuclear plants become more difficult to operate safely even if they are safer on paper?

CHAIRMAN PALLADINO: To some degree, we think backfitting or retrofitting may have in the past caused problems similar to the ones referred to in the question. However, present NRC backfit controls (e.g., internal reviews and backfit rule) are intended to minimize these types of problems.

The NRC's controls include the use of value/impact analyses and reviews by the Committee to Review Generic Requirements (CRGR). The value/impact analyses examine the net increase in safety. That is, negative aspects of a proposed backfit are examined as well as the positive aspects. The evaluation of negative aspects includes consideration of overall plant safety including, where appropriate, impacts on other systems, and, increased difficulty in performing operations, maintenance and surveillance.

The value/impact analyses and any proposed regulatory requirements are scrutinized by the senior managers and the CRGR to assure that backfits are appropriate and that the overall effects in plant safety have been considered.

MR. FAZIO: Has the NRC done any research to establish where the personnel with operating or higher responsibilities in nuclear power plants tend to come from?

CHAIRMAN PALLADINO: NRC has not performed research directly related to the question. In a 1979 sample of the docket files of 303 licensed operators and senior operators (out of a total of 2,552 licensed individuals) about one-third had non-commercial (mostly naval) nuclear operating experience. As of February 3, 1986 the NRC had docket files for 4,675 licensed operators and senior operators. In a 1985 sample (NUREG/CR-4139) of operators, 300 respondents (58%) reported at least one year experience in the nuclear navy and 246 (48%) had at least six years in the nuclear navy. One hundred twelve (22%) reported some experience in fossil-fuel power generation.

MR. FAZIO: What is their usual educational or experiential background?

CHAIRMAN PALLADINO: The NRC requires that operator license applicants be high school graduates or have the GED equivalent.

A May 1985 NRC survey reported on the highest educational levels of a sample of 513 licensed operators and senior operators. I will submit the results for the record.

(The information follows:)

Results of Survey of 513 Licensed Operators and Senior Operators at Nuclear Power Plants

HIGHEST LEVEL OF EDUCATION	PERCENT
GED	2
High School Graduate	37
1-2 Years College	31
Associate Degree	10
3-4 Years College	7
Bachelors Degree	9
Some Post-Graduate	4

MR. FAZIO: What is their salary level and how does it compare with technicians carrying enormous responsibilities in other fields, such as airline pilots?

CHAIRMAN PALLADINO: The NRC does not normally collect information on salary levels of operators and is unable to provide definitive salary level information on technicians in other fields.

However, the NRC Office of Personnel obtained information from the International Brotherhood of Electrical Workers (IBEW) indicating that the mean salary for licensed senior operators was $37,261 in 1985. This information may be somewhat misleading if overtime and bonuses are not included. It is my understanding that information regarding compensation is generally proprietary and so not releasable.

MR. FAZIO: How old are they? Are we getting a stream of smart younger people into the operation of nuclear plants and are they staying?

CHAIRMAN PALLADINO: Based on a 1979 survey (SECY-79-330A), the median age for licensed senior operators and licensed operators, respectively, is 36 and 33 years of age, while all were over 25 years of age.

The Institute for Nuclear Power Operations (INPO), in 1981, projected a large demand for new personnel in the nuclear utility industry over the next decade. At that time INPO estimated that 40,000 new personnel would be needed during the next ten years: 13,000 would be new positions, and the remaining positions would be replacements for personnel leaving the nuclear power field.

The Nuclear Manpower Study Committee, in 1981, reported that for 75 operating plants (at that time) with 3,000 licensed operators and licensed senior operators, the attrition rate was 5.5 percent per year.

MR. FAZIO: In your opinion, are the educational requirements high enough to ensure sufficiently qualified personnel to operate nuclear plants?

CHAIRMAN PALLADINO: Currently, only about 15 percent of all licensed operators and senior operators have baccalaureate degrees in engineering or some other related field. The remaining 85 percent of all licensed operators and senior operators have less than a baccalaureate degree, and many of these operators have only high school diplomas.

The findings of two recent studies indicate that about 10 percent of the academic knowledge needed by operators is covered in high school and about 65 percent of academic knowledge needed by operators is taught in college level technical engineering courses. However, even for a degreed engineer more comprehensive knowledge is required about plant operations and systems and design and along with specialized training in normal and off-normal plant conditions.

At this time, the Commission is considering an Advance Notice of Rulemaking to obtain comments on whether or not to require a baccalaureate degree for licensed senior operators. This NRC initiative is in the very early stages. If approved, it is not difficult to estimate a decade for implementation.

MR. ROBERTS: The Commission has only recently issued, in October 1985, a policy statement which will provide for engineering expertise on shift. I am unaware of any new information that indicates that this expertise is inadequate and that further enhancement is required. More importantly, the proposed actions in SECY-86-70, which would require a degree for senior operators, ignores the conclusions contained in the "Report of the Peer Advisory Panel and the Nuclear Regulatory Commission on Operator Qualifications," (SECY-82-162). This report concludes not only that there was no evidence that a formal degree is necessary for job performance but that "imposition of such a requirement... is likely to result in a decrement in overall performance and thus impair public safety". Among the disadvantages that the panel members saw resulting from imposition of a degree requirement were: poor performance; inexperienced operators; high turnover and the driving out of experienced operators. They further believed that inclusion of a selection standard (requirement for a degree) not related to performance "will likely result in a decrement in the overall quality of personnel selected for the position." In addition, the emphasis on a degree was considered "misplaced"; the emphasis should be on specific training requirements.

I have seen nothing since 1982 which would invalidate these conclusions. Although I continue to believe in the need for well-trained and qualified operators, not only is there no demonstrated safety benefit from this proposed action but there is a significant potential for negative safety implications. Therefore, I believe that this proposed rulemaking is ill-advised.

MR. FAZIO: Is the salary scale high enough?

CHAIRMAN PALLADINO: The NRC does not have accurate information on operator salary scales and, therefore, is not able to comment.

MR. FAZIO: Are the working rules sensitive enough to requirements for the job? For instance, are there limits on consecutive hours worked and minimums for hours off, and prohibitions against alcohol?

CHAIRMAN PALLADINO: The current NRC policy on working rules for operators recommends limits on hours of work (including overtime) for 1 day (16 hours), 2 days (24 hours), and 7 days (72 hours); further: an individual should not be permitted to work more than 16 hours straight (excluding shift turnover time), and a break of at least 8 hours should be allowed between work periods (including shift turnover time). This policy statement is presently under review by the NRC to determine if revisions are warranted.

The NRC is currently developing, in conjunction with industry, a Fitness for Duty Policy Statement that would specify Commission expectations and policy with regard to drug and alcohol programs of utilities.

MR. FAZIO: Do you think that different institutional structures might be more effective at improving nuclear security than imposing overlays of technical safety systems?

CHAIRMAN PALLADINO: Current institutional structures are appropriate for nuclear security. The Commission considers safeguards an integral and ongoing element of NRC responsibility and believes safeguards regulation should be conducted with the same defense-in-depth philosophy as safety regulation. However it is also the Commission's policy that implementation of safeguards requirements shall not be contrary to the safe operation of a facility and will include consideration of overall cost effectiveness. Performance-based requirements are emphasized rather than prescriptive requirements to allow licensees to select the most cost-effective ways to satisfy NRC requirements.

MR. FAZIO: For instance, what is your view on issues like having regional entities with the job of wholesaling nuclear power to distributing utilities?

CHAIRMAN PALLADINO: The question of regional wholesaling of nuclear power does not directly bear on safety of nuclear plant operation, the basic function of the NRC. There are some sections of the country where utilities have combined to organize a centralized generating organization providing power to the members for distribution (the Yankee organizations in New England). In other instances individual utilities operate facilities on their own behalf (or on behalf of a group of other utility companies). Both of these organizational arrangements can provide adequate safety in plant operation. Depending on the location of a particular plant, i.e., the area to which it will provide service, consideration should be given to competitive implications such as whether approval of a single source of wholesale nuclear power will provide that source with significant economic power, i.e. raise antitrust issues.

MR. FAZIO: Would it make sense to charter certain engineering firms with the authority to operate nuclear plants on behalf of utilities?

CHAIRMAN PALLADINO: The concept of providing an engineering firm to act as operator for a number of nuclear utilities and plants has merit, and in some instances may provide a viable option for commercial power plant management. Such a method has the potential safety and economic benefits associated with the consolidation of plant management, engineering and operations, from a number of small entities to a larger entity. Personnel benefits include enhanced personnel retention due to the increased opportunity for career progression. Current licensing practice appears to be able to accommodate the safety review and authorization of such an activity. In summary, the concept has potential merit, and there are alternatives regarding the specific method to implement it.

MR. FAZIO: Are utilities emeshed in personnel policies and standards unsuitable for nuclear operators, assuming they are a somewhat different breed of employee?

CHAIRMAN PALLADINO: The NRC does not regulate the personnel policies of utilities. The minimum performance standards for licensed operators are established in Title 10 of the Code of Federal Regulations, Part 55. Licensed operators and senior operators are required to pass an NRC-administered examination to qualify for an operator or senior operator license, and to operate the plant in accordance with the NRC's rules and regulations and individual plant procedures.

MR. FAZIO: Under severe budgetary pressures this year, the Office of Nuclear Waste has dropped funding for seabed disposal of nuclear material. The decision was based more on near term budget problems than on merits of seabed disposal versus land disposal. Also, I very strongly suspect, the nuclear industry wanted to force a choice, regardless of merit, of one option so we can proceed with it. This tends to mean that alternatives get viewed as competitors which can be cited by opponents as reasons to oppose the work in progress. Ergo, seabed disposal is terminated.

What is your assessment of the inherent merits of seabed versus land based disposal? Is it true that the oceans function as a natural radiation sink, and that in addition ocean sediments are ideal natural substances to adsorb radioactive nuclei? Would these factors tend to mean that ocean disposal is what we term "inherently safe," and that at the least the industry and we might do better by the future if we allowed work to proceed on this option?

CHAIRMAN PALLADINO: NRC is not in a position to comment on the inherent safety of subseabed disposal. The selection and development of disposal technologies for high-level waste is a responsibility of the Department of Energy. Accordingly, the Commission has essentially concentrated its staff resources exclusively on monitoring the development of deep geologic disposal.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

March 27, 1986

The Honorable Tom Bevill
Subcommittee on Energy and Water Development
Committee on Appropriations
U. S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

During the March 20, 1986 Subcommittee hearing on NRC's Appropriations for Fiscal Year 1987, I was asked about the levels of safety being achieved at nuclear reactors in other countries. In response, I gave a brief description of the French approach to resolving the station blackout issue and compared their aggressive approach to safety to the timid approach being pursued by the NRC. I would like to clarify and expand my response for the record.

The French set a target of achieving a core melt frequency from station blackout, as well as other core meltdown sequences, of one in ten million per reactor year (i.e., 10^{-7} per reactor year). In trying to achieve that target, the French have decided to backfit their plants with a capability to cope with the blackout for a period of 72 hours. (See the attached excerpts from the November 14, 1985 Commission meeting on the NRC proposed station blackout rule and the French article "Primary-System Integrity of French Pressurized-Water Reactors During Station Blackout," Nuclear Safety, Vol. 26, No. 4, July-August 1985.) The NRC objective is to set a target of achieving a core meltdown frequency from station blackout of one in one hundred thousand per reactor year (i.e., 10^{-5} per reactor year). The NRC is trying to ensure that the U.S. plants have a capability to cope with a blackout for a period of 4 hours.

As indicated in the attached excerpts of the Commission meeting on station blackout, the Germans have installed 4 onsite emergency diesel generators plus from 2 to 4 additional diesels and a bunkered decay heat removal system. Also attached are a January 14, 1986 note to Commissioner's assistants from the staff regarding improvements being made at the Swedish plants and a March 6, 1986 memorandum to the Chairman from the EDO regarding Belgian safety initiatives.

In my view, many other countries have and are taking the U.S.-developed technology and minimum safety standards, and building on them to have better nuclear plants with greater defense-in-depth than that being achieved in this country. In short, other countries have better designed plants that are operated and maintained better than the U.S. plants and that are safer than the U.S. plants. They have achieved a far better state of affairs with respect to reliability and safety of their plants than this country has. And, they have accomplished this in a disciplined manner at reasonable costs. These other countries do not have a "backfit rule" and do not go about "cost-benefit analyses" the way NRC does.

I would appreciate this letter being incorporated in this hearing record.

Sincerely,

James K. Asselstine

Enclosures:
As stated

cc: John T. Myers
Ranking Minority Member

ORIGINAL

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMISSION MEETING

Continuation of 9/11
Discussion of Proposed
Station Blackout Rule

(Public Meeting)

Docket No.

RETURN TO SECRETARIAT RECORDS

Location: Washington, D. C.
Date: Thursday, November 14, 1985

Pages: 1 - 94

ANN RILEY & ASSOCIATES
Court Reporters
1625 I St., N.W.
Suite 921
Washington, D.C. 20006
(202) 293-3950

~~me later. That's fine.~~

~~MR. RUBIN: All right. I don't have that on my fingertips.~~

~~CHAIRMAN PALLADINO: When you consider -- mine is really not with core frequency. I will wait until later.~~

~~MR. RUBIN: We just went through to corroborate that this doesn't really change our conclusions when you look at the plant-specific PRAs.~~

~~(SLIDE.)~~

MR. RUBIN: Onto a different subject from PRAs, since the last Commission meeting we have some additional information on the French design for station blackout.

MR. DENTON: We talked about this during the safety goal meeting, I think, and we have now had a chance to interact with the French just on this topic and have what we think is a fairly good understanding of their design for station blackout.

MR. RUBIN: The French have a target of achieving a core melt frequency from station blackout of ten to the minus seventh per reactor year. In trying to achieve that target, they have determined that common mode failures are potentially significant, that they are taking an approach where defense-in-depth and an ability to cope with the blackout and a design that they have included on their new 1,300 megawatt plants and is also being backfitted on their existing 900 megawatt plants gives them a capability to cope with the blackout for three days.

In that time period they feel that they can restore power if not from an offsite power source or some other source from a mobile gas turbine that can be moved from one site to another.

CHAIRMAN PALLADINO: They can withstand it for three days?

MR. RUBIN: They can withstand a total loss of AC power for three days.

CHAIRMAN PALLADINO: How do they handle the heating, ventilating, air conditioning load? I am thinking specifically of the incident in which the loss of air conditioning caused the temperature in the control room to raise above 90 degrees and lo and behold it turns out the instruments go awry at 90 degrees and they began to show anomalies.

It sounds like air conditioning is very important for the control room. How do they handle that?

MR. RUBIN: It is one of the things we have considered in the resolution package here in looking at the environmental conditions following a station blackout. At the time we didn't have the detailed report on this event you are referring to at Maguire so we didn't specifically address that with the French.

CHAIRMAN PALLADINO: Do we address it in our own package?

MR. RUBIN: We do address it in our own package. The evaluation of station blackout coping capability would include assessing the operability of equipment that would be needed to function during a station blackout

CHAIRMAN PALLADINO: Doesn't air conditioning take a fair amount of power?

MR. RUBIN: With a station blackout you wouldn't have the normal heating, ventilation and air conditioning?

CHAIRMAN PALLADINO: What would you have to keep the temperatures from rising to where you lose the instruments?

MR. RUBIN: You might be able to open some doors or some cabinets and get some natural circulation going for a period of time. That would be one of the things that would need to be assessed.

CHAIRMAN PALLADINO: But you might be bringing in as much heat load unless you have some colder places.

MR. DENTON: The heat load, of course, drops with no AC or heat load is the DC power but that is an issue that will have to be looked at.

MR. BARANOWSKY: Also, the French design includes a steam-driven generator that provides AC at least for charging batteries and they may tap a little bit off just on those instrument cabinets that they need to have a fan running for.

CHAIRMAN PALLADINO: I am surprised to learn that instruments go awry at 90. Can't you get instruments that go better than 90 degrees?

MR. DENTON: I don't know how representative that case is.

CHAIRMAN PALLADINO: I don't either.

MR. DENTON: It is something that we have to look into.

MR. RUBIN: I think in that case the instruments were probably subject to temperatures above 90 but the ambient room temperature might have been 90.

COMMISSIONER BERNTHAL: There would be a certain irony if after all of the EQ things we have done, we proceeded on the reasonable assumption that as long as human beings could be in the control room at least that they were the most sensitive mechanism there and it turned out that that weren't true, that it was equipment instead.

CHAIRMAN PALLADINO: All right.

MR. RUBIN: Just to go into a little bit what the French have included, they have two diesels per plant which is similar to what we have here and they can also have the capability for 100-percent load rejection without tripping the turbine. If the grid goes down, they can reduce load and maintain the plant on house load.

They have this mobile gas turbine that I mentioned earlier.

CHAIRMAN PALLADINO: Are plants don't have this capability?

MR. RUBIN: Our plants generally don't have 100-percent load rejection. It is kind of around the 50-percent range normally.

CHAIRMAN PALLADINO: Do any of them have 100-percent capability?

MR. RUBIN: There might be a few.

MR. DENTON: I think Palo Verde is attempting to demonstrate so we may have a few, yes.

CHAIRMAN PALLADINO: Thank you.

COMMISSIONER ASSELSTINE: I think Diablo claims that they do as well. They mentioned that when I was out there.

MR. RUBIN: That is a benefit but in actual practice at least the French have had about a 50-percent success with maintaining the plant operable following a 100-percent load rejection.

They also are able at the sites to interconnect both offsite and onsite power sources from one unit to another.

So even with this AC power capability, they still have design features to cope with the blackout for this extended period of time.

The new French design has two steam-driven auxillary feedwater pumps in addition to two motor-driven pumps. So they have four trains of auxillary feedwater.

They have added a steam-driven generator that provides power for a pump to cool the reactor coolant pump seals and also to provide power for instrumentation and control needed during station blackout.

COMMISSIONER BERNTHAL: It sounds like they must have really taken this whole business very, very seriously because three days is a large margin for error. If you have it for a day even, I guess you are to the point where you should be natural circulation.

MR. RUBIN: What their original objective was kind of on the order of a day, 20 hours.

COMMISSIONER BERNTHAL: Yes.

MR. RUBIN: What they found though when they put in the design modifications to achieve that objective, it wasn't very difficult to show that they have the capability for the steam generators to go for longer periods of time.

COMMISSIONER ASSELSTINE: The tough part is getting to the 20 hours.

MR. RUBIN: Once they put in the steam-driven generator that provided cooling for the pump seals and provided some DC power for battery charging, that got them a long way and they had a gravity feed for the condensate storage tank to provide water source for a long period of time.

COMMISSIONER BERNTHAL: It sounds like their objective is almost to have emergency power until they achieve cold shutdown essentially. Is that right?

MR. RUBIN: They are not trying to get to cold shutdown. They are just trying to maintain the plant in a stable condition until they can get AC power back and then get to cold shutdown. They won't have the RHR systems operating.

COMMISSIONER BERNTHAL: I see. All right.

MR. RUBIN: I mentioned again that they are backfitting this design on the existing 900 megawatt plants.

COMMISSIONER ASSELSTINE: Do you have an estimate on what the cost is for backfitting the requirements on the 900 megawatt plants?

MR. RUBIN: From what they told us, it was less than $500,000.00.

CHAIRMAN PALLADINO: For each plant?

COMMISSIONER ASSELSTINE: Less than $500,000.00 per unit?

MR. RUBIN: Per unit. Now they already have a test pump that they use for charging so basically when they add some piping for a steam turbine and generator that provides power for an existing pump.

COMMISSIONER ASSELSTINE: Do you have an estimate for what it would cost to backfit those same requirements on US plants, the ones they are doing for the 900 megawatt plants, not the ones they are doing for the 1,300?

MR. DENTON: Since they have a standard plant, their costs are no doubt cheaper than it would be in the US non-standardized plants.

MR. RUBIN: We have estimated a higher cost for doing that here.

CHAIRMAN PALLADINO: Yes. It seems to me I remember $600,000.00 on the average with a range of $200,000.00 to four million.

MR. RUBIN: We didn't estimate that backfit would be necessary for achieving full radar coping capability. If we are talking about longer times which at one time we were until we looked at the loss of offsite power data in more detail for a day or so, then we looked at coping capabilities and the need for seal cooling, a separate seal cooling system, and we estimated maybe two to four million for that backfit.

COMMISSIONER ASSELSTINE: Which would be comparable to this.

MR. RUBIN: Which would provide the same functions for this. But that can vary. It depends if the plant had an existing pump or had similar design to the French, it could be a lot less.

CHAIRMAN PALLADINO: But you did give a range.

MR. RUBIN: We did give a range.

CHAIRMAN PALLADINO: It was quite a range. I thought I remembered an average of $600,000.00?

MR. RUBIN: That is right. That is for the kinds of things we might see at creating battery capacity if needed, for doing station blackout assessment.

CHAIRMAN PALLADINO: The actual cost will depend on the specific plant.

MR. RUBIN: It will be very plant specific. That is right.

COMMISSIONER ASSELSTINE: But the range at least even if in crude terms for achieving one-day capability, that is cooling capability for the reactor coolant pump seals would be for the US plants somewhere in the neighborhood of two to four million.

MR. RUBIN: Probably. That is our estimate.

COMMISSIONER ASSELSTINE: All right.

COMMISSIONER BERNTHAL: How does the French requirement compare with Germany, Belgium, Sizewell or am I jumping the gun here?

MR. RUBIN: No. I have some information on that.

COMMISSIONER BERNTHAL: Sweden.

MR. RUBIN: Most countries do not have specific designs. The British do in Sizewell and we talked about this at the last meeting. They have actually two steam-driven charging pumps for seal cooling in their design.

COMMISSIONER ASSELSTINE: Right.

MR. RUBIN: In Germany, for example, their 1,300 megawatt plants, they have four onsite emergency diesel generators plus from two to four additional diesels, the bunkered system or separate decay heat removal system.

MR. DENTON: It is more like the dual system that we have talked about.

MR. RUBIN: So station blackout is not a significant consideration when they have so many diesels and redundant and diverse systems.

The Swedish, for example, have either four emergency diesel generators per unit or two diesel generators plus two gas turbines either nearby or onsite. They also have some additional redundancy or diversity that is not typical for most US plants.

COMMISSIONER BERNTHAL: What are the coping targets for those various countries?

MR. RUBIN: I don't think they have considered coping targets but they consider that station blackout is not a very likely event because of their large numbers of AC power sources. I don't whether they have done a PRA type analysis.

MR. BARANOWSKY: The Germans consider loss of their emergency AC power system but not the bunkered system so the bunkered system does their coping for them and it is unlimited.

COMMISSIONER ASSELSTINE: Yes, that is right. Is it fair to say that all of the instances that you have just described to provide better capability for dealing with loss of offsite power than the average US plant?

MR. RUBIN: Some plants have additional capability.

It varies. That is why we had such an extent of time looking at the diverse designs.

Obviously the more diesels up to a certain point, the more reliability. You have the onsite power systems and you still have the potential for common cause failures which is one of the reasons again I reiterate that we are looking at a defense-in-depth and an ability to cope as a resolution of this issue.

COMMISSIONER ASSELSTINE: How many US plants have less than two diesels per unit?

MR. RUBIN: Maybe a multi-unit site you mean with three diesels?

COMMISSIONER ASSELSTINE: YEs.

MR. RUBIN: About five. If you count plants that have two units with two diesels, they both share, you might be at about eight or nine, something like that.

MR. DENTON: It tended to be the early plants that had the swing diesels and as we began to worry more about interconnections, they went independent.

MR. RUBIN: About 15-percent, something like that.

MR. SPEIS: Commissioner Bernthal, the greatest goal for coping capabilities is about a day.

COMMISSIONER BERNTHAL: A day?

MR. SPEIS: Yes. That is the goal.

COMMISSIONER BERNTHAL: So not so much different.

MR. SPEIS: It is not so much different from the French, yes.

COMMISSIONER BERNTHAL: Except it looks like France has a larger margin.

COMMISSIONER ASSELSTINE: But substantially beyond even what you are proposing in this rule for the US plants.

MR. RUBIN: Right.

(SLIDE.)

~~MR. RUBIN: If we can continue on to slide ten, we mentioned earlier that we have received recent comments from industry on NUREG-1032. This is a summary of some of those comments, ones that were highlighted.~~

~~One is that there was some concern expressed that in the 1032 analysis the staff did not give significant consideration for credit for improvements, recent improvements in loss of offsite power experience.~~

~~I would like to show a slide, it is a back-up slide in your package.~~

~~MR. SPEIS: It is in the new package we gave you.~~

~~MR. RUBIN: In the new package we recently put together there is an additional slide.~~

~~(SLIDE.)~~

~~MR. RUBIN: This is taken from a --~~

~~CHAIRMAN PALLADINO: Which one is this?~~

~~MR. RUBIN: It is B-2, the last slide in your set.~~

~~CHAIRMAN PALLADINO: Why don't we go to your questions or comments. Go ahead, Tom.~~

~~COMMISSIONER ROBERTS: I want to review the answers to my questions which I have not had a chance to do in great detail. At first glance, I am not persuaded they are responsive.~~

COMMISSIONER BERNTHAL: I actually did have one remaining question that I guess relates somewhat to Jim's comment or question, whichever it was.

When you look at the French, the Belgians and the Germans and the British and Swedish and the Fins who follow the Swedes and the Swiss who follow the Germans or somebody I guess and Japan, how did you decide that doing one-fourth of what they typically do is enough?

MR. DENTON: Let me start with, Themis, did you tell your anecdote?

COMMISSIONER ASSELSTINE: That is a good question.

MR. DENTON: I don't know if we have had Themis recount his discussion with the French on this matter, did you do it last time, about the four to eight?

MR. SPEIS: We met with the French about a month ago on the Paluel design and the first presentation I had to make was to describe our approach to station blackout.

I started talking and I came to the coping capability and I starting mentioning the word "four" and before I finished, they got up and they apologized. They said, "We are not as conservative as you are."

(Laughter.)

MR. SPEIS: Then I said "four hours".

(Laughter.)

CHAIRMAN PALLADINO: That is interesting.

COMMISSIONER ASSELSTINE: I think that is a very good question, Fred.

MR. DENTON: To some extent many other countries are taking our minimum standards and building on them. They are saying it is a good starting point but they are not necessarily the best thing for their country.

Now they have other power concerns and PUC arrangements and a lot of other factors that drive them to do different maintenance practices and different approaches to these problems.

CHAIRMAN PALLADINO: I think they are taking some of the improbable accidents about which there seems to be debate and making them so improbable they are no longer an issue.

MR. DENTON: Often if there are plants on borders between countries, they do to extraordinary measures to assure the acceptability of the plant.

COMMISSIONER BERNTHAL: Population density and the smallness of the countries certainly does play a role.

CHAIRMAN PALLADINO: Do you have more?

Accident Analysis

Edited by P. M. Haas and H. E. Knee

Primary-System Integrity of French Pressurized-Water Reactors During Station Blackout

By F. Kappler,[a] L. Mougey,[b] and R. Simon[c]

Abstract: *This article reviews the evolution of France's position regarding the postulated accident of total loss of alternating-current power, commonly known as station blackout, and identifies the consequences. The article includes the country's general philosophy for dealing with accidents at the limit of design, the as-built system and its expected response to station blackout, the definition of current design limitation, and the evaluation of several mitigation options and component and system tests. It describes the selection of the most cost-effective mitigation action, the development of operating procedures, and the verification of those procedures with full-scale tests. Such a mitigating package is part of the standard 1300-MW(e) plant design (18 units) and will be incorporated with the existing 900-MW(e) design (34 units) over the next 2 yr.*

Prior to the accident at Three Mile Island Nuclear Station Unit 2 (TMI-2), most countries involved in the construction of nuclear power plants had progressively elaborated a deterministically based doctrine. After the TMI-2 event, many new questions in all areas of safety of nuclear power plants arose. All of these questions are essentially variations of the following theme: What needs to be taken into account in the design and how are situations mitigated when there is a potential for fuel damage?

Accordingly, the French utility, Electricité de France (EDF), had protracted discussions with the French safety authorities on potential accidents and particularly on those at the limit of design.[1]

Ultimately, a probabilistically based approach was selected to deal with these postulated accidents. The frequency of occurrence of accidents beyond design that potentially involve fuel damage must be in the order of 10^{-7} per reactor year (RY) or less to be admissible without any mitigating action. If the probability were higher, mitigating actions would be required according to the French nuclear safety regulation. Along these lines, and at the request of the safety authorities, EDF has developed operating rules associated with some small design modifications for the following three postulated accidents (in which the deterministic approach based on the principle of single failure is no longer used):

---

[a] Francois Kappler is with Electricité de France, Service des Études Projets Thermiques et Nucléaires at Lyon, where he is in charge of system analysis on pressurized-water reactors. A 1977 graduate of l'École Centrale at Lyon and of the Polytechnical Institute of Grenoble, his first experience in the nuclear industry was as a startup engineer on the power plants of Gravelines and Blayais. Current address: Electricité de France, 12-14 Avenue Dutrievoz, 69628 Villeurbanne Cedex, France.

[b] Louis Mougey is with Electricité de France, Direction des Études et Recherches. A 1959 graduate of l'École Nationale Superieure des Arts et Metiers, he is an expert on mechanical seal and pump packing. Current address: Electricité de France, Études et Recherches, 6 Quai Watier, 78400 Chatou, France.

[c] Remy Simon was with Electricité de France, Service des Études Projets Thermiques et Nucléaires until July 1984, where he was responsible for design of pumping equipment. He is now with Région Equipement in Paris (REP). Simon is a 1958 graduate of l'École Nationale Supérieure des Arts et Industries at Strasbourg. Current address: Electricité de France, REP, 1A de France, 98089 Paris, France.

1. Loss of heat sink, which led to the H1 procedure.
2. Loss of auxiliary feedwater, which led to the H2 procedure.
3. Station blackout [total loss of alternating-current (a-c) power], which led to the H3 procedure.

The last situation (station blackout) is the subject of this article, which discusses the original design and its expected performance under these postulated conditions as well as the development, justification, and verification of the new accident procedures and hardware changes.

AS-BUILT SYSTEM FEATURES

The French nuclear power plants have, as power supplies, two electrical connections to the grid, the so-called external power supplies. The first one, the principal line, operates at a voltage of 400 kV and removes the energy produced by the plant. The second one is an auxiliary supply of the plant operating under a voltage of 225 kV for the 900-MW(e) units and 400 kV for the 1300-MW(e) units. In addition, there are two independent internal supplies, each composed of one diesel generator supplying only those systems considered necessary for the safety of the unit. Each diesel generator is connected to one of the two redundant trains supplying the safety-related equipment.[a]

The degree of redundancy of such a supply system is considered very high, but the currently estimated probability of station blackout is 4 × 10^{-5}/RY for the French pressurized-water reactor (PWR). The probability of loss of all a-c power is:[2]

1. 2 × 10^{-5}/RY for more than 1 h.
2. 8 × 10^{-6}/RY for more than 3 h.
3. 5 × 10^{-6}/RY for more than 8 h.
4. 2 × 10^{-6}/RY for more than 24 h.

Therefore the consequences must be mitigated in one manner or another.

An analysis of station blackout identifies the loss of primary-pump seal injection associated with the loss of cooling of the thermal barrier (loss of the component cooling system due to the total loss of a-c power) as the weak link of the situation. Failure of the seals could lead to a significant breach of the primary pressure boundary. The first question to be answered is whether the loss of seal injection and thermal barrier cooling would lead to significant leakage.

ANALYSIS OF SEAL BEHAVIOR UNDER ACCIDENT CONDITIONS

To better understand the behavior of pump seals in unusual operating conditions, EDF conducted a full-scale test program. These tests were done at the test facilities of Gennevilliers and Montereau (near Paris).

The testing station of Gennevilliers (Fig. 1) is a loop that allows the testing of primary pumps under full flow rate, pressure, and temperature conditions. It was built in 1973 to check the hydraulic characteristics and the long-term reliability of the primary pumps used by EDF in the plants.[3,4]

TEST FACILITY DESCRIPTION

As shown in Fig. 1, the loop resembles the primary loop of a PWR with pressurizer, charging and letdown line, seal injection, and component cooling system. The only difference appears in the geometry of the loop and the reduced volume of the loop (30 m^3).

The second facility, the static test bench of Montereau (Figs. 2 and 3), is associated with the feedwater circuit of a 240-MW(e), coal-fired power plant. In that test station, instead of the complete primary pump, only the full-scale seal cartridge has been installed.

Fidelity of the simulations made in Montereau, which involved only nonrotating components, was quite good. So that a good simulation could be ensured, those parts of the pump not included on the bench were simulated. For example, the labyrinth of the thermal barrier was simulated by a diaphragm.

The supply of hot water for the test bench derived from the feedwater circuit of the coal power plant is at a temperature regulated up to 300°C and a pressure up to 1.75 × 10^7 Pa. Where the first tests were conducted, the flow rate of the

---

[a] Diesel reliability:[1] $y = 2 \times 10^{-2}$, where y is the probability of failure per demand, and $\beta = 2 \times 10^{-2}$, where β is the common-mode failure ratio.

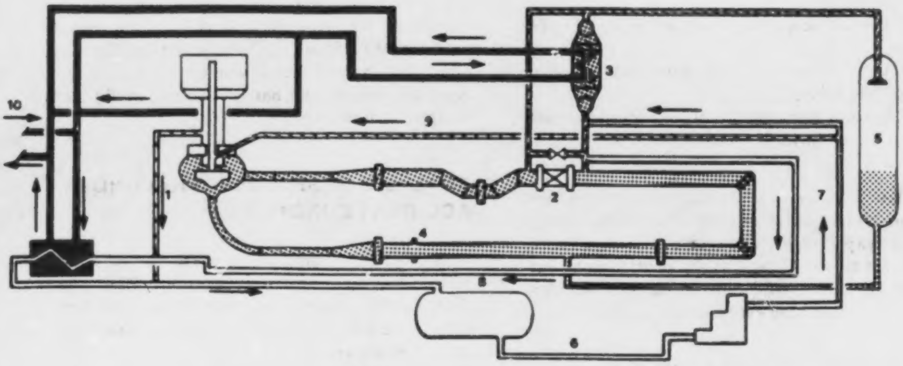


Fig. 1 Gennevilliers test loop: (1) primary pump, (2) butterfly valve, (3) heat exchanger by-passing the valve, (4) flow rate measurement, (5) pressurizer, (6) volume control system, (7) charging line, (8) letdown line, (9) seal injection supply, and (19) component cooling system.

water supplied to the bench was limited to 10 m^3/h.

TEST CONDITIONS

The most important tests concerning station blackout situations were identified as (1) a test on simultaneous loss of seal injection and cooling of the thermal barrier of the primary pumps (this test was deliberately limited to 2 min to protect the seals from failure or permanent damage),[5] (2) a test on the effect of seal behavior with variation in temperature of seal injection water, and (3) a test to determine the inertia of the thermal barrier in case of the loss of its cooling.

TEST RESULTS

Analysis of these tests indicates that temperature has a large impact on the opening, and therefore leak rate, of the seals. The influence of the heatup rate, measured at seal 1, acts in such a manner that above a certain value the opening of the seal increases drastically (see Figs. 4 and 5). The opening follows an exponential curve. [As soon as the heatup rate drops to less than a certain value (5°C/min), the exponential evolution of the leakage is stopped and the leakage can even decrease to reach a stable state.]

Operation and protection procedures similar to those used in the plants were followed so that all tests would maintain their representative nature. Consequently the seal 1 leakoff line was closed as soon as the seal 1 leakage flow rate reached a value in excess of 1.4 m^3/h and the primary pump came to a stop. (This second criterion has been included in the procedures to avoid the destruction of seal 2 by alumina particles that would come from seal 1 if it were to fracture.)

A simulation was made to determine the inertia of the thermal barrier. The thermal barrier inertia can be illustrated by comparing Figs. 5 and 6. A delay of about 4 min occurs before the water at the seal becomes hot. Once the mitigating effect on the inertia of the thermal barrier is overcome (after a few minutes), the temperature of the seal and thus the leakage flow rate increases in an exponential manner.

These phenomena, described in Figs. 4 to 6, are more applicable to primary pumps of the French 1300-MW(e) units [Westinghouse Framatome pumps type 100, 20.3-cm (8-in.) seals] than to those of the 900-MW(e) units [Westinghouse Framatome pumps type 93 D, 17.8-cm (7-in.) seals], in which the delay is 50 to 100% more (see Fig. 7).

Complementary tests were done in 1981 at the test facility of Montereau to assess the effect of elevated temperature on seal performance. The re-

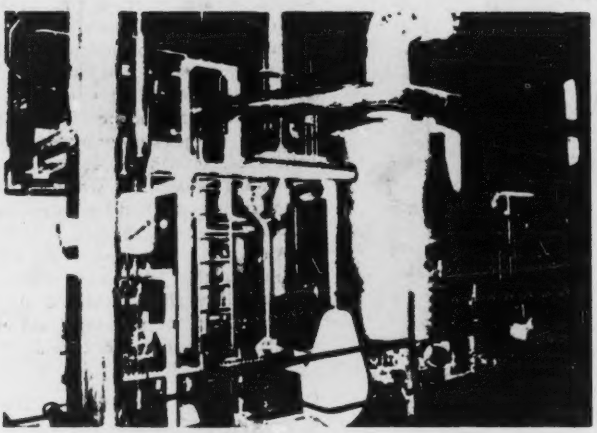


Fig. 2 General view of the Montereau test facility: (1) steam collecting cap, (2) charging pump, (3) hot water feedline, (4) control cabinet, and (5) outlet to the atmosphere.

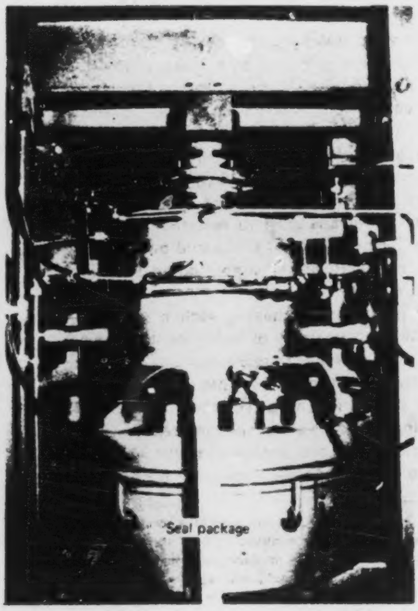


Fig. 3 View of the 17.8-cm mock-up inside the steam collecting cap of the Montereau test facility.

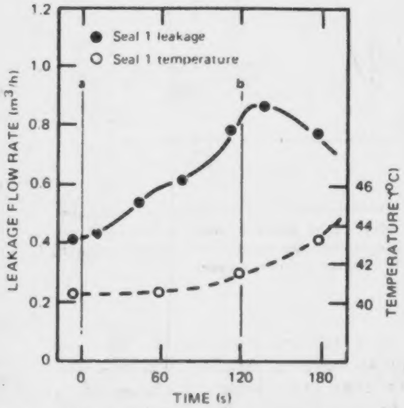


Fig. 4 Simultaneous loss of seal injection and thermal barrier at the Gennevilliers test loop (pump type 100): *a*, beginning; *b*, end (reestablishment of thermal barrier cooling).

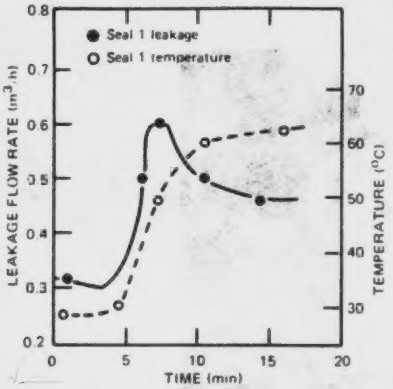


Fig. 5 Influence of temperature on seal 1 leakage at Gennevilliers test loop (pump type 100).

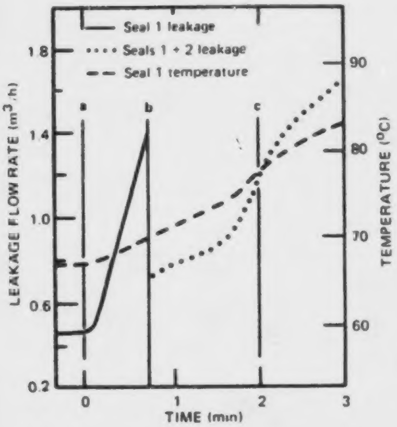


Fig. 6 Loss of seal injection at Gennevilliers test loop (pump type 100) when thermal barrier cooling was cut before test began: *a*, loss of seal injection, *b*, closing of seal 1 leakoff, and *c*, reestablishment of cooling barrier.

sults of these tests are in agreement with those obtained in Gennevilliers, especially with those concerning the effect of the heatup rate measured on the seal. In the test shown in Fig. 7, the seals were tested under temperature conditions of 210°C, and a steady-state leakage flow rate was observed (constant to a value of about 4 m³/h). However, the constant leakage was only temporary, and after 15 min at 210°C, the seal popped open and the leak rate reached the test loop flow rate capacity. This test was conducted with the leakoff valve of seal 1 closed and therefore does not provide information on the behavior of seal 1 with its leakoff valve open. Nevertheless, conservative assumption is that the behavior of seals 1 and 2 would be rather similar and that the valve position would have little effect (Fig. 8).

A physical explanation for this behavior is not readily available, but, on the basis of the loss of the mechanical characteristics of the O-rings, the possibility that the pressure could open the seal and close the gaps must be considered (Fig. 9).

CONSEQUENCES OF STATION BLACKOUT[6-8]

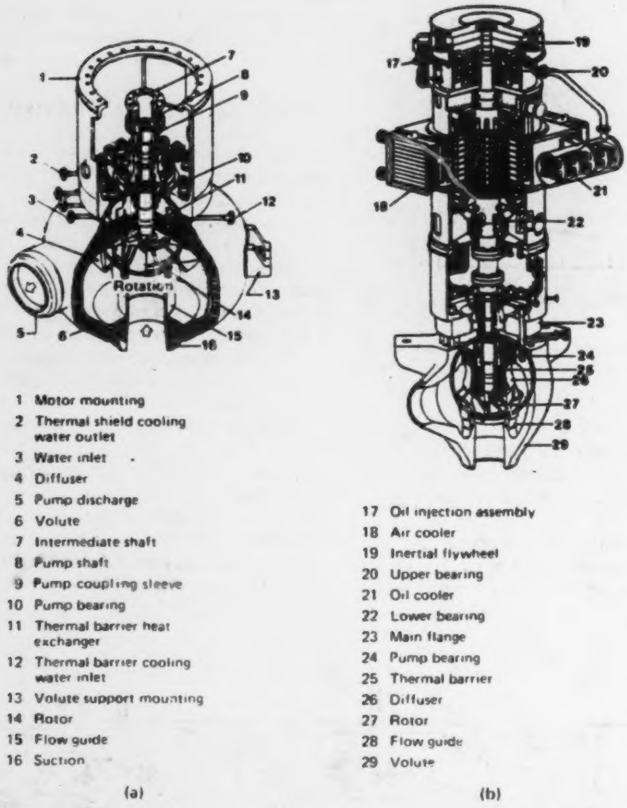
After the analysis of the tests, a conservative but still realistic scenario for the behavior of the seals in case of station blackout (Fig. 10) can be defined.

Following this scenario, the probability of a loss of primary integrity with leakage flow rates in the order of 3 × 50 m³/h [three-loop reactor, equivalent to a 1.9-cm (¾-in.) break] is on the order of the station blackout probability (2×10^{-5}/RY) because the probability to restore the power in a short period of time (< 1 h) does not exceed 0.5 (Ref. 2)[a]. Accordingly, with the loss of all a-c power, no means exist to maintain coolant inventory. The integrity of fuel could potentially be endangered if no power supply could be quickly connected.

The possibility of having such a situation is similar to the probability of losing the second emergency steam driver turbogenerator (or the hydrostatic test pump supplied by that turbogenerator). If such a situation occurred, there would be no mitigating action to avoid the melting of the core. This point of view was applicable to the 900-MW(e) units. In the 1300-MW(e) units, the probability is

---

[a] Note added in proof: On the basis of a recent test at the Montereau facility, which simulated a 20-h station blackout, the maximum leakage of the primary-pump seals was less than 3.5 m³/h under nominal conditions (with a 20-sec transient of 14 m³/h). Thus the postulated 50 m³/h leakage rate may now be far too conservative.



1 Motor mounting
2 Thermal shield cooling water outlet
3 Water inlet
4 Diffuser
5 Pump discharge
6 Volute
7 Intermediate shaft
8 Pump shaft
9 Pump coupling sleeve
10 Pump bearing
11 Thermal barrier heat exchanger
12 Thermal barrier cooling water inlet
13 Volute support mounting
14 Rotor
15 Flow guide
16 Suction

(a)

17 Oil injection assembly
18 Air cooler
19 Inertial flywheel
20 Upper bearing
21 Oil cooler
22 Lower bearing
23 Main flange
24 Pump bearing
25 Thermal barrier
26 Diffuser
27 Rotor
28 Flow guide
29 Volute

(b)

Fig. 7 Thermal barrier configuration for pump types 93D (a) and 100 (b) at Montereau test facility.

negligible in comparison with the probability of losing the steam-driven turbogenerator (or the hydrostatic test pump) in the station blackout situation.

The station blackout scenario[1] relative to the core is as follows: After the reactor trip, the residual heat of the core is removed by natural circulation in the steam generators, which are themselves supplied with water by the auxiliary steam-driven feedwater pump. The energy is evacuated through the steam generator relief valves, and secondary cooldown is initiated. On the primary side, because of the loss of primary integrity induced by the leakage past the pump seals, the level of the pressurizer decreases. As soon as the pressurizer is empty, the primary loop reaches the saturation conditions and the coolant starts boiling. This boiling could disturb the natural circulation, and the available analyses are not sufficiently advanced to be certain of the possibilities of reflux boiling (steam cooling) to remove the residual heat.

Ultimately, if power continues to be unavailable, enough water will be lost through the pump seals to uncover the reactor fuel, and inadequate core-cooling conditions may occur. This scenario

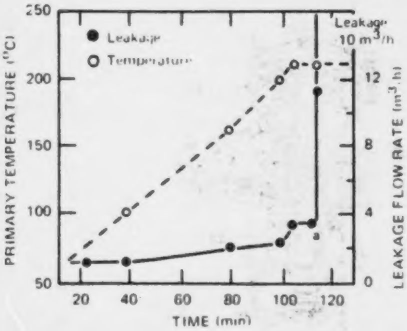


Fig. 8 Static bench high-temperature test at Montereau test facility (pump 93D): left of *a*, seal 1 leakoff closed; right of *a*, seal 2 open.

can only be delayed but not stopped until a-c power is restored or plant equipment can be made available to restore reactor coolant system inventory.

If a leakage of 68 m^3/h on each primary pump core is assumed, uncovering will begin 3 h after the beginning of the accident. The pressure will decrease until the pressure of the accumulators is reached (4.2×10^6 Pa), and the injection of the accumulator contents will temporarily compensate for the leakage through the primary-pump seals.

MITIGATING ACTIONS REVIEW

To mitigate the postulated consequences of station blackout, the French safety authorities requested the EDF to take measures to save the primary integrity in case of station blackout. The EDF has consequently studied several mitigating actions. On the primary-pump itself, an auxiliary system to ensure leak tightness was studied. This system was designed to be set on the head of seal 3 and operated by compressed air. The function was to stop the leakage flow along the shaft when the pump rotor was stopped. The system, however, is too complicated to be installed in the plant. There is the problem of reliability as well as the risk of system activation during the rotation of the pump. The possibility of obtaining emergency power from the adjacent unit was also studied [the French 900-MW(e) units are built in pairs]. This mitigation action was not considered sufficiently reliable to handle both units. The creation of a new internal power supply with the startup

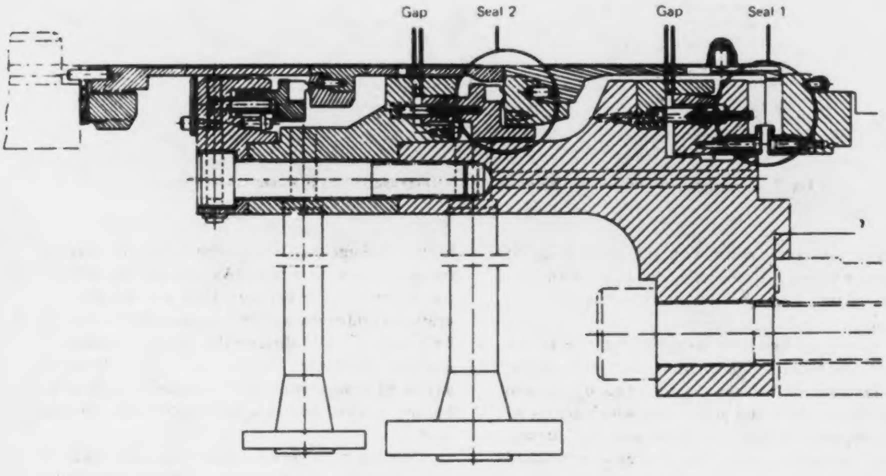


Fig. 9 Montereau test facility primary pump.

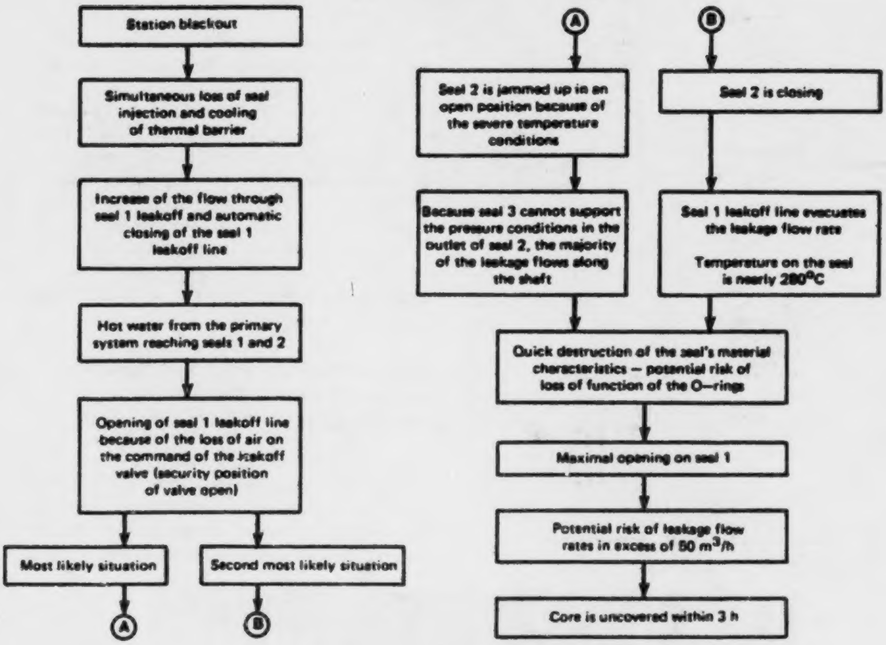

Station blackout
Simultaneous loss of seal injection and cooling of thermal barrier
Increase of the flow through seal 1 leakoff and automatic closing of the seal 1 leakoff line
Hot water from the primary system reaching seals 1 and 2
Opening of seal 1 leakoff line because of the loss of air on the command of the leakoff valve (security position of valve open)
Most likely situation
Second most likely situation
A
B
A
B
Seal 2 is jammed up in an open position because of the severe temperature conditions
Seal 2 is closing
Because seal 3 cannot support the pressure conditions in the outlet of seal 2, the majority of the leakage flows along the shaft
Seal 1 leakoff line evacuates the leakage flow rate
Temperature on the seal is nearly 280°C
Quick destruction of the seal's material characteristics — potential risk of loss of function of the O—rings
Maximal opening on seal 1
Potential risk of leakage flow rates in excess of 50 m³/h
Core is uncovered within 3 h

Fig. 10 Postulated field behavior during station blackout.

of a gas turbine available in the plant or in the vicinity was also studied. Finally, after evaluating these and other options for mitigation, the EDF determined that the most cost-effective solution was to install a small, steam-driven turbogenerator set (a-c) at each unit [secondary emergency 380-V a-c power supply (LLS) system] to power the hydrostatic test pump to supply emergency seal injection (Fig. 11). In addition to the turbogenerator set, an emergency injection line was constructed that required only minor modifications to the chemical and volume control system lines. Figures 12 and 13 show the system installed in the second unit of Cruas [900-MW(e)]. The total cost of that modification (in France) will be ~2000 KF per unit.

The control equipment absolutely necessary to operate the plant in a station blackout situation will also be supplied by the LLS turbogenerator. The other control equipment is then disconnected from the power supply to have a good reliability of the d-c power sources when power will be restored to save the batteries.

The possibility of connecting a gas turbine in the event of an extended blackout was also considered. This gas turbine should be able to be connected, if necessary, within 3 d after the beginning of station blackout. This 3-d margin allows the EDF to have a regional gas turbine that can be sent to a plant as required.

PROCEDURE VERIFICATION

The functional tests of the emergency injection line associated with the small steam-driven turbogenerator were made at one of the units of the Cruas Station at the beginning of 1984. These tests were fully satisfactory.

The operating limits of the steam-driven turbogenerator are from 286°C and 7.1×10^6 Pa to 164°C and 7.0×10^5 Pa at the inlet of the turbine. Accordingly, because emergency seal injection can

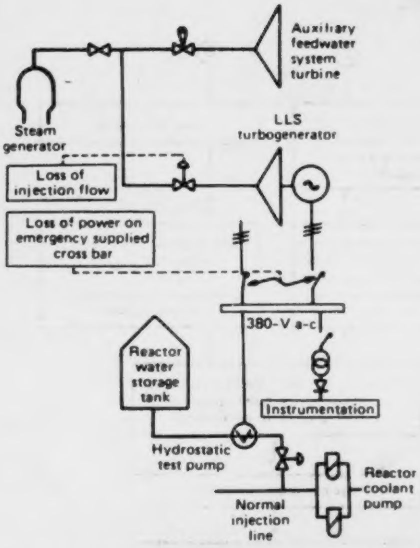

Auxiliary feedwater system turbine
Steam generator
LLS turbogenerator
Loss of injection flow
Loss of power on emergency supplied cross bar
380-V a-c
Reactor water storage tank
Instrumentation
Hydrostatic test pump
Reactor coolant pump
Normal injection line

Fig. 11 Secondary emergency 380-V alternating-current (a-c) power supply (LLS) system.

only be supplied when the turbogenerator is in operation (i.e., for a primary-system temperature above 170°C), the EDF, at the request of the safety authorities, conducted a new series of full-scale tests to demonstrate that the seal integrity could be maintained during a long-term exposure of 170°C and 4×10^6 Pa without seal injection and with the leakoff valve of seal 1 closed. These tests, which were duplicated several times, demonstrate the seal integrity. On this basis, a station blackout procedure has been set up to maintain the unit in safe condition for 72 h without additional equipment, except for the small turbogenerator. This will provide ample time to connect a regional gas turbine generator or other supply of electricity to the plant.

OPERATING RULE FOR STATION BLACKOUT USING EMERGENCY SEAL INJECTION

In case of a station blackout, the turbogenerator will start with the indication of "low flow rate in the reactor coolant pump's seal injection line," and the powering of the hydrostatic test pump will be initiated in the case of loss of power

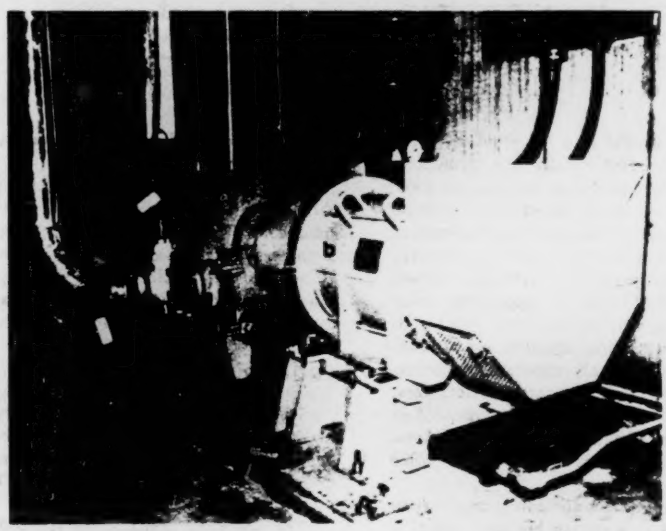


Fig. 12 Cruas Station secondary emergency 380-V alternating-current power supply turbogenerator.

May 1984. During the next 2 yr, the currently operating 900-MW(e) plants (34 units) will be backfitted on the basis of the system installed on the unit of Cruas 4.

REFERENCES

1. P. Y. Tanguy, The French Approach to Nuclear Power Safety, *Nucl. Saf.*, 24(5): 589-606 (September–October 1983).
2. N. Schektman, A. Villemeur, J. P. Berger, J. Boisseau, A. Dubreuil-Chambardel, and F. Mosneron-Dupin, *Nuclear Power Plant Design: Contribution of Probabilistic Methods and Their Complete Loss of Electrical Power Supplies*, presented at the International ANS/ENS Topical Meeting, San Francisco, Calif., February 1985.
3. P. Blanc-Ferraud and R. Bonnafoux, *Les installations d'essais d'Electricité de France dans le domaine des pompes de centrales nucléaires*, Association internationale de recherches hydrauliques, Baden-Baden Congress, 1977.
4. P. Polin and R. Bonnafoux, *La boucle d'essais des pompes primaires de reacteurs à eau légère d'Electricité de France*, presented at the IAHR–AIR Symposium, Vienna, 1974.
5. Jeumont-Schneider, *Manuel d'exploitation des pompes primaires.*
6. *Westinghouse Emergency Response Guidelines*, European Symposium, Brussels, November 1981.
7. R. R. Schultz, C. D. Fletcher, and T. R. Charlton, Station Blackout in U.S. Light-Water Nuclear Reactors, *Nucl. Saf.*, 25(4): 501-511 (July–August 1984).
8. F. E. Haskin, W. B. Murfin, J. B. Rivard, and J. L. Darby, *Analysis of an Hypothetical Core Meltdown Accident Initiated by Loss of Offsite Power for the Zion 1 Pressurized Water Reactor*, NRC Report NUREG/CR-1988 (SAND-81-0503), Sandia National Laboratories, NTIS, December 1981.

THIRTEENTH WATER REACTOR SAFETY RESEARCH INFORMATION MEETING

Gaithersburg, Maryland, Oct. 22-25, 1985

The Office of Nuclear Regulatory Research of the NRC will hold its Thirteenth Water Reactor Safety Research Information Meeting at the National Bureau of Standards. The four-day meeting will cover the results and plans of the NRC's nuclear safety research programs as well as including invited papers on industry-sponsored safety research and research programs abroad.

Concurrent sessions in the major areas of safety research are planned as follows:

October 22—Plenary Session (Introductions and Invited Speakers), Reactor Systems Research, Risk Analysis (Severe Accident Risk), Mechanical and Structural Engineering, Process Control, and Nuclear Plant Aging.

October 23—Containment Systems Research (Severe Accident Studies), Separate Effects Research (Model Development and Experiments), International Code Assessment Programs, Seismic Research, and Research on Equipment Qualification.

October 24—Fuel Systems Research, Accident Source Term Assessment, Risk Analysis (Reliability and Risk Methods), International Code Assessment Program, Materials Engineering Research, Containment Systems Research, and Surry Steam Generator (Examination and Evaluation).

October 25—Materials Engineering Research, Code Assessment and Improvement, 2D/3D Research, Nuclear Plant Analyzer Program, Radiation Protection, and Industry Safety Research.

For additional information, contact Allen J. Weiss, Meeting Coordinator, Brookhaven National Laboratory, Building 197-C, Upton, NY 11973, Telephone (516) 282-4473.

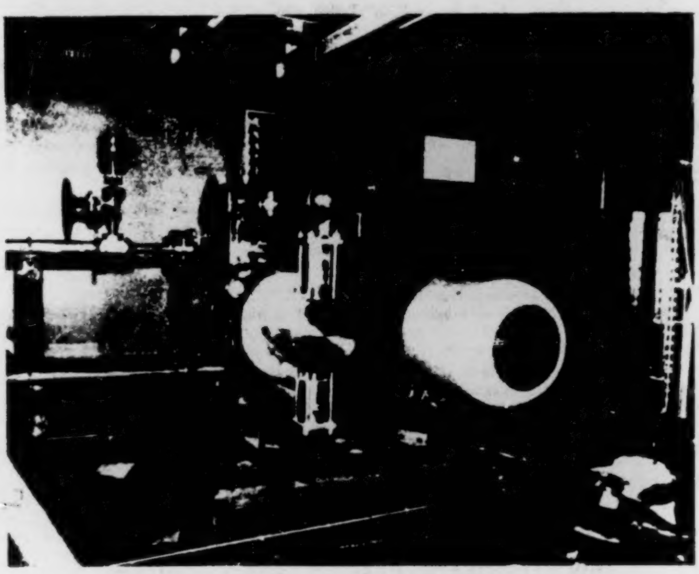


Fig. 13 Cruas Station hydrostatic test pump.

on the emergency supplied crossbars. At this point, two actions become very important: (1) the inlet of the hydrostatic test pump must be aligned with the refueling water storage tank and (2) the seal 1 leakoff line must be closed.

As soon as the emergency injection flow is greater than the leakage, the excess of primary water must be evacuated. The only solution is to cool down the plant and to take advantage of the contraction induced by the cooldown to compensate for the excess of injection water. Consequently the primary-system cooldown gradient will be adjusted in such a way as to keep the pressurizer level constant. At this point the operator must pay close attention to avoid the creation of a steam bubble under the reactor vessel head. At this time the head is no longer being ventilated (during loss of a-c power); its cooldown is very slow. (So that a good understanding of the cooldown gradient of the head could be achieved, a test was made on the Gravelines plant in February 1984.) Once the safe state of 170°C and 4×10^6 Pa is reached, the situation can be maintained for 72 h; this ensures the primary-system integrity. During this long period of time, actions can be undertaken without haste to restore the power supply in the safest and most reliable manner.

CONCLUSIONS

Having decided to face the problem of station blackout in a conservative manner by creating an emergency seal injection mechanism, the EDF has solved in a cost-effective manner the problem of seal and thus primary integrity during station blackout.

The only modification would be the addition of a small 150-kW turbogenerator set and simple piping and control logic changes. This system has been included in the design of the 1300-MW(e) plants whose first unit Paluel 1 became critical in

January 14, 1986

NOTE TO: Philip Polk
Charles Ader
John Austin
James F. Meyer
Max Clausen

FROM: Themis P. Speis, Director
Division of Safety Review and Oversight

SUBJECT: SWEDISH AUTHORITIES RECOMMEND IMPROVED PROTECTION AGAINST RELEASE IN THE CASE OF SEVERE REACTOR ACCIDENT (CONTAINMENT VENTING)

In the December 5, 1985 issue of Nucleonics week, we became aware of a study sponsored by the Swedish Nuclear Power Inspectorate that addresses means to mitigate the radiological consequences of severe accident. Through our Office of International Program, we have obtained a telex (a copy is enclosed) that summarizes some key findings that emerged from that study.

It is our understanding that one of the proposals involves the use of alternative technical solutions instead of the Filtra filtered containment venting system in use at the Barsebeck Nuclear Power Station.

We have requested a copy of the Swedish study, we will keep you abreast of any new development in this area and will forward you a copy of the Swedish report upon its receipt.

Themis P. Speis, Director
Division of Safety Review and Oversight

Enclosure:
As stated

11961Z SWEATO S

U.S. NUCLEAR REGULATORY COMMISSION

1985 DEC 30 AM 9 42

TELECOM-BR-DFOS

U' item

FILE

also copy to [illegible]

& one to circulate in IP/IC

Howard — other action;

Ron

TLX 422/85 LH 1985-12-30

TO: RONALD D. HAUBER
ASS'T DIRECTOR FOR INT. COOPERATION
OFFICE OF INTERNATIONAL PROGRAMS
USNRC (FOR GENERAL NRC INFO)

COPY TO: DR D. EISENHUT
DEPUTY DIRECTOR, OFFICE OF NRR (AS CSNI MEMBER FOR NRC)

LH02

1985-12-30

SWEDISH NUCLEAR POWER INSPECTORATE:

PUBLIC INFORMATION NOTICE

SWEDISH AUTHORITIES RECOMMEND IMPROVED PROTECTION AGAINST RELEASES IN THE CASE OF SEVERE REACTOR ACCIDENTS.

IN LETTERS TO THE SWEDISH GOVERNMENT, THE SWEDISH NUCLEAR POWER INSPECTORATE (SKI) AND THE NATIONAL RADIATION PROTECTION INSTITUTE (SSI) PROPOSE IMPROVED PROTECTION AGAINST RELEASES IN THE CASE OF A SEVERE ACCIDENT FOR THE NUCLEAR POWER PLANTS IN FORSMARK, OSKARSHAMN AND RINGHALS. THE PROPOSED REQUIREMENTS ARE BASED ON REVIEWS OF PLANT-SPECIFIC SEVERE ACCIDENT STUDIES SUBMITTED BY THE PLANT OWNERS IN APRIL, 1985. SOME MAIN POINTS IN THE PROPOSED REQUIREMENTS ARE:

- IMPROVED PROTECTION AGAINST EARLY AND DIRECT DAMAGE TO THE CONTAINMENT IN THE CASE OF A CORE MELT. MEASURES PROPOSED BY THE OWNERS INCLUDE IMPROVED PROTECTION OF PARTICULARLY EXPOSED PENETRATIONS AND SUPPORT STRUCTURES, AS WELL AS INSTALLATION OF ADDITIONAL EQUIPMENT ENABLING RAPID FLOODING OF THE LOWER DRY-WELL IN THE FORSMARK 1-3 AND OSKARSHAMN 3 BWR'S. | ✗

- ALL CONTAINMENTS SHOULD BE PROVIDED WITH DEVICES FOR PRESSURE RELIEF, PROTECTING THE CONTAINMENT AGAINST THE MAJOR NUMBER OF SUCH BEYOND-DESIGN-BASIS EVENTS THAT MAY LEAD TO LOSS OF CONTAINMENT INTEGRITY DUE TO OVERPRESSURE. THE RELIEF DEVICES

SHOULD BE SO DESIGNED THAT THEY CAN FUNCTION INDEPENDENTLY OF OPERATOR ACTION AND OF OTHER SAFETY SYSTEMS IF THE CONTAINMENT DESIGN PRESSURE IS SUBSTATIALLY EXCEEDED. IN ADDITION, OPERATORS SHOULD BE ABLE TO USE THE RELIEF DEVICES ACTIVELY AS A PART OF ACCIDENT MANAGEMENT ACTIONS. THE RELIEF DEVICES SHOULD BE SO DESIGNED THAT THEY, TOGETHER WITH OTHER SAFETY SYSTEMS (E.G. CONTAINMENT SPRAYS), ENSURE WITH HIGH RELIABILITY THAT RELEASES TO THE ENVIRONMENT ARE KEPT BELOW 0.1 PERCENT OF RADIONUCLIDE INVENTORY IN A 1800 MW(TH) CORE, NOBLE GASES EXCLUDED, AND WITH SOME REGARD TO HOW VARIOUS RADIONUCLIDES CONTRIBUTE TO RADIATION RISKS, ESPECIALLY GROUND CONTAMINATION. APPROPRIATE MEASURING EQUIPMENT SHOULD BE PROVIDED TO ENABLE PREDICTION AND MONITORING OF RELEASES THROUGH THE RELIEF DEVICES.

- THE IMPROVED PROTECTIVE MEASURES AGAINST RELEASES IN THE CASE OF A SEVERE ACCIDENT SHOULD BE IMPLEMENTED BY SEPT. 1, 1989 AT THE LATEST.

THE RELEASE PROTECTION LEVEL REQUIRED FOR THE FORSMARK, OSKARSHAMN AND RINGHALS PLANTS IS EQUAL TO THAT REQUIRED FOR THE BARSEBECK PLANT WITH ITS FILTRA FILTERED VENT SYSTEM, WHICH BECAME OPERATIONAL IN NOVEMBER, 1985. HOWEVER, ALTERNATIVE TECHNICAL SOLUTIONS TO THE LARGE BARSEBECK FILTER MAY BE ENVISAGED, ACCORDING TO THE SKI - SSI REVIEW REPORT. SUCH ALTERNATIVE TECHNICAL SOLUTIONS ARE PRESENTLY BEING DISCUSSED WITH THE UTILITIES CONCERNED AND INCLUDE:

- LARGE AREA, UNFILTERED AND RECLOSING RELIEF SYSTEMS TO COPE WITH DRYWELL TO WETWELL ISOLATION FAILURE IN COMBINATION WITH A LOCA IN BWR PRESSURE SUPPRESSION CONTAINMENTS, THUS PREVENTING CONTAINMENT DAMAGE WHICH, IN TURN WIL PROBABLY CAUSE FAILURE OF CORE COOLING IN SUCH SEQUENCES.

- IMPROVED CONTAINMENT SPRAY SYSTEMS

- SMALL AREA VENTING SYSTEMS WITH RETENTION DEVICES SUCH AS SCRUBBERS OR FILTERS TO PROVIDE LONG TERM PRESSURE CONTROL IN THE CONTAINMENT.

THE PROPOSED REQUIREMENTS ARE BASED ON THE GENERAL SEVERE ACCIDENT POLICY GUIDELINES ISSUED IN 1981 BY THE SWEDISH GOVERNMENT AND PARLIAMENT. THESE GUIDELINES PUT A HIGH PRIORITY ON PREVENTION OF EXTENSIVE GROUND CONTAMINATION IN ORDER TO LIMIT SOCIAL CONSEQUENCES IN THE CASE OF A SEVERE REACTOR ACCIDENT. THIS PRIORITY IS THE MAIN BASIS FOR THE 0.1 PERCENT RELEASE LIMIT, WHICH ALSO PROVIDES GOOD MARGINS AGAINST ACUTE RADIATION ILLNESS AND FATALITIES.

IN ADDITION TO THESE GENERAL POLICY GUIDELINES, SKI AND SSI INTER ALIA STATES THE FOLLOWING IN THEIR REVIEW REPORT AS A BASIS FOR THE PROPOSED REQUIREMENTS:

- THE PRIMARY SAFETY OBJECTIVE IS STILL TO PREVENT CORE DAMAGE. THIS PREVENTIVE SAFETY LEVEL HAS IMPROVED IN SWEDISH REACTORS IN THE PAST FIVE YEARS DUE TO SAFETY-ENHANCING MEASURES IMPLE-

MENTED ON THE BASIS OF OPERATIONAL EXPERIENCE AND PLANT-SPECIFIC PRA'S. ALSO, THE SAFETY LEVEL IS BETTER KNOWN. NEVERTHELESS, IT MUST BE TAKEN INTO ACCOUNT THAT SEVERE ACCIDENTS CAN OCCUR.

- THERE IS SUBSTANTIALLY IMPROVED KNOWLEDGE ON SEVERE ACCIDENT PHENOMENA, INDICATING THAT CONTAINMENTS HAVE GOOD CAPABILITIES TO WITHSTAND SEVERE ACCIDENTS, PROVIDED THAT 'WEAK SPOTS' IDENTIFIED IN DESIGN-SPECIFIC STUDIES, ARE STRENGTHENED. FURTHERMORE, DESIGN-SPECIFIC ACCIDENT MANAGEMENT STRATEGIES SHOULD BE PREPARED, AIMED AT PROTECTING THE CONTAINMENT FUNCTION, AND, IN THE LONG TERM, AT REACHING A STABLE PLANT STATE WITH THE DAMAGED CORE COOLED IN A CONTAINMENT AT NORMAL PRESSURE AND POSSIBLY FILLED WITH WATER ABOVE THE LEVEL OF THE DAMAGED CORE.

- EVEN IF THEORETICAL CALCULATIONS INDICATE A FAIRLY LOW PROBABILITY FOR LARGE RELEASES, IT DOES NOT APPEAR REASONABLE TO LET A CONTAINMENT REMAIN AT ELEVATED PRESSURES - PERHAPS EXCEEDING THE DESIGN PRESSURE - FOR EXTENDED TIMES. FIRSTLY, DIFFUSE LEAKAGE OF RADIOACTIVITY TO AUXILIARY BUILDINGS, ETC. MAY CREATE SERIOUS PROBLEMS FOR ACCIDENT MANAGEMENT ACTIONS BRINGING THE PLANT TO A STABLE STATE. SECONDLY, THERE ARE, AND WILL PROBABLY REMAIN, UNCERTAINTIES ABOUT CONTAINMENT FAILURE PRESSURES AND FAILURE MODES (E.G. LEAK BEFORE BREAK) AS WELL AS ABOUT THE-BEHAVIOUR OF VARIOUS RADIOACTIVE SUBSTANCES DURING A WIDE RANGE OF POSSIBLE SEVERE ACCIDENT CONDITIONS. THIRDLY, IT MUST BE RECOGNIZED THAT A CONTAINMENT WITH A DAMAGED CORE AND IN A STATE CHARACTERIZED BY ELEVATED OR INCREASING PRESSURE WILL CREATE DIFFICULT DECISION MAKING AND PUBLIC INFORMATION PROBLEMS FOR THE EMERGENCY MANAGEMENT AUTHORITIES.

A SWEDISH GOVERNMENT DECISION ON THE PROPOSED REQUIREMENTS IS EXPECTED EARLY IN 1986.

LARS HOEGBERG
DIRECTOR, OFFICE OF REGULATION AND RESEARCH
SWEDISH NUCLEAR POWER INSPECTORATE

NRC BHD WSH .

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAR 06 1986

MEMORANDUM FOR: Chairman Palladino

FROM: Victor Stello, Jr.
Acting Executive Director
for Operations

SUBJECT: MEETING WITH THE BELGIAN REPRESENTATIVES REGARDING THE DESIGN PHILOSOPHY OF DOEL 3 AND 4

Representatives from the Belgian Safety Review and Inspection Organization, Vincotte, and the Belgian Architect Engineer for Doel Units 3 and 4, recently briefed the NRR staff on the safety features and experience of these plants. The NRC regulations provided the foundation for the design requirements imposed on these Belgian units. However, additional design criteria were imposed due to local conditions and policy.

Knowledge of the design and construction of these facilities provides valuable insights for application in our related activities, such as the resolution of USI A-45, Backfitting, and Safety Goal Policy Development. Therefore, I am forwarding NRR's meeting summary for your information.

Victor Stello, Jr.
Acting Executive Director
for Operations

Enclosure:
Meeting Summary

cc: Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech
SECY
OPE
OGC

Contact: T. Speis, NRR
49-27517

Enclosure

MEETING WITH BELGIAN REPRESENTATIVES REGARDING THE DESIGN PHILOSOPHY OF DOEL 3 & 4
SUMMARY

On February 11, 1986, NRR met with representatives from Vincotte, the Belgian Safety Review and Inspection Organization, and Tractionel, the Architect Engineer, to discuss the design and operating experience of the Doel 3 & 4. This report, which provides a summary of that meeting, is provided to you for your information.

The latest Doel units (Nos. 3 and 4) are of particular interest to the staff since they are "bunkered" designs that provide a fairly full featured "second level" of protection against most external events. The Belgians are backfitting the earlier Doel 1 & 2 units to provide additional protection. Knowledge of the design, construction and operation of these facilities provides valuable insights for application in our related activities such as the resolution of USI A-45, Shutdown Decay Heat Removal, Safety Goal Policy development, and backfitting.

Belgium is densely populated and highly industrialized. The Doel site is located approximately 9 miles northwest of Antwerp, Belgium. In light of the population in the vicinity and due to the proximity of major petrochemical facilities, a shipping channel, and the history of military aircraft crash incidents throughout Europe, the design basis of the plants included protection against specific external events including gas cloud explosion, large-scale fire, direct hit aircraft crashes, acts of malviolence, and other accidents making the control room inaccessible. Doel 3 is primarily of Framatone (900 MWe) design while Doel 4 is primarily of Westinghouse (1000 MWe) design. The features incorporated into the design to accommodate these events include a crash/explosive resistant secondary containment and a bunker that houses three independent physically separated 50% trains of emergency feedwater (EFW), reactor coolant make-up and boration, and two 100% trains of reactor coolant pump seal injection. Each of the three redundant trains are independent and self sufficient from water supply to injection. The bunker protects all of the support systems, including electrical power and cooling systems for these functions and provides protection for portions of other essential systems such as the main steam system. With a complete loss of the control room, the bunker systems are designed to automatically bring the plant to hot shutdown and maintain that condition for up to three hours following activation without any operator action. It should also be noted that without the bunker, Doel 3 & 4 have a higher degree of redundancy and separation than their U.S. counterparts. First level systems include three 100% trains of AFWS, RHR, and HPSI.

The decision has also been made to backfit Doel 1 & 2 with an additional single train of equipment, including EFW and other functions, that would be manually controlled and not meet single failure criteria.

Some of the key points to note are the following:

- The Doel 3 & 4 design evolved solely from a government mandated licensing basis that included protection against certain external events. The method to meet the design basis, was left primarily to the utility and the Architect Engineer.
- The Belgians did use a "Safety Objective" for plant design. However the safety analysis is based on deterministic principles. The general safety objective was that the risk to the public from all reactor accidents would be much less than other risks of life. Since construction began in 1975, other more detailed criteria were based on WASH-1270. They view the usefulness of PRA as we do - as a tool to provide insights into the plant safety.
- The decision to add the bunker rather than redesign or re-site the plant appears to have resulted from the limitations of the time, e.g., site availability, schedule for installation/construction etc. The bunkered system of these units was designed primarily to protect against certain events and not to improve the overall mitigation of accidents. However, during the last few years, the margin afforded by this extra safety equipment has facilitated their resolution of several safety issues such as Station Blackout, i.e., an extra dedicated diesel for each of the three trains is bunkered for each unit.
- Decisions, early on, concerning the plant design basis resulted in cost effective construction (the bunker was estimated to cost about 8% of the total plant cost), resolved initial licensing concerns, and were again highly cost effective when utilized to resolve new safety concerns that emerged throughout the years of construction and operation.
- The Doel bunkers are not intended to provide additional protection against internal events such as steam generator tube ruptures or loss of coolant accidents. This bunker concept relies on the retention of primary coolant system serviceability.
- The Doel 3 & 4 plant availability has not been degraded by adding the additional bunker equipment. The reliability of the bunkered systems is good and there have been no significant spurious actuation problems.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

March 27, 1986

The Honorable Tom Bevill
Subcommittee on Energy and Water Development
Committee on Appropriations
U. S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

During the March 20, 1986 Subcommittee hearing on NRC's Appropriations for Fiscal Year 1987, I was asked about the levels of safety being achieved at nuclear reactors in other countries. In response, I gave a brief description of the French approach to resolving the station blackout issue and compared their aggressive approach to safety to the timid approach being pursued by the NRC. I would like to clarify and expand my response for the record.

The French set a target of achieving a core melt frequency from station blackout, as well as other core meltdown sequences, of one in ten million per reactor year (i.e., 10^{-7} per reactor year). In trying to achieve that target, the French have decided to backfit their plants with a capability to cope with the blackout for a period of 72 hours. (See the attached excerpts from the November 14, 1985 Commission meeting on the NRC proposed station blackout rule and the French article "Primary-System Integrity of French Pressurized-Water Reactors During Station Blackout," Nuclear Safety, Vol. 26, No. 4, July-August 1985.) The NRC objective is to set a target of achieving a core meltdown frequency from station blackout of one in one hundred thousand per reactor year (i.e., 10^{-5} per reactor year). The NRC is trying to ensure that the U.S. plants have a capability to cope with a blackout for a period of 4 hours.

As indicated in the attached excerpts of the Commission meeting on station blackout, the Germans have installed 4 onsite emergency diesel generators plus from 2 to 4 additional diesels and a bunkered decay heat removal system. Also attached are a January 14, 1986 note to Commissioner's assistants from the staff regarding improvements being made at the Swedish plants and a March 6, 1986 memorandum to the Chairman from the EDO regarding Belgian safety initiatives.

In my view, many other countries have and are taking the U.S.-developed technology and minimum safety standards, and building on them to have better nuclear plants with greater defense-in-depth than that being achieved in this country. In short, other countries have better designed plants that are operated and maintained better than the U.S. plants and that are safer than the U.S. plants. They have achieved a far better state of affairs with respect to reliability and safety of their plants than this country has. And, they have accomplished this in a disciplined manner at reasonable costs. These other countries do not have a "backfit rule" and do not go about "cost-benefit analyses" the way NRC does.

I would appreciate this letter being incorporated in this hearing record.

Sincerely,

James K. Asselstine

James K. Asselstine

Enclosures:
As stated

cc: John T. Myers
Ranking Minority Member

3/20/86

PERSONAL REMARKS BY CHAIRMAN PALLADINO

INTRODUCTION: MR. CHAIRMAN, SINCE THIS MAY BE THE LAST TIME I WILL BE APPEARING BEFORE YOU, I WOULD LIKE TO PROVIDE SOME PERSONAL OBSERVATIONS BASED ON MY EXPERIENCES AS CHAIRMAN OF THE NRC FOR MORE THAN 4-1/2 YEARS. MY OBSERVATIONS CONCERN NRC'S MAJOR GOALS, THE FUTURE OF NUCLEAR POWER AND NUCLEAR REGULATION, AND SOME SUGGESTIONS FOR THE CONGRESS.

FIRST ARE MY OBSERVATIONS CONCERNING THE ACCOMPLISHMENT OF NRC'S MAJOR GOALS. DURING THE PAST 4-1/2 TO 5 YEARS:

1. OUR REGULATORY OVERSIGHT OF THE NUCLEAR INDUSTRY HAS RESULTED IN CONTINUED ASSURANCE OF PUBLIC PROTECTION; IN FACT, I BELIEVE THAT, AS A GENERAL PROPOSITION, NUCLEAR POWER IS SAFER NOW THAN EVER BEFORE.

2. WE HAVE LICENSED ABOUT 2 DOZEN NEW REACTORS, WITH PROPER REGARD TO SAFETY AND WITH LITTLE OR NO UNWARRANTED DELAY. WE ALSO COMPLETED THE THREE MILE ISLAND 1 RESTART PROCEEDING.

3. WE HAVE MADE MUCH PROGRESS IN THE CLEANUP OF THREE MILE ISLAND 2 AND IN WASTE MANAGEMENT.

4. WE HAVE MADE SIGNIFICANT ADVANCES IN DEFINING A SAFETY GOAL, AND I HOPE FINAL COMMISSION ACTION ON A POLICY STATEMENT ON THIS MATTER WILL OCCUR BEFORE MY TERM ENDS.

5. WE HAVE IMPROVED CONTROL OVER THE REQUIREMENTS NRC LEVIES ON THE NUCLEAR INDUSTRY; AND

6. WE HAVE PROPOSED LEGISLATION TO THE CONGRESS TO STREAMLINE THE LICENSING PROCESS, FOCUSING ON ENCOURAGING AND PROVIDING INCENTIVES FOR THE USE OF STANDARDIZED NUCLEAR POWER PLANTS IN THE FUTURE.

HOWEVER, SOME IMPORTANT GOALS HAVE NOT YET BEEN ACCOMPLISHED. I HAVE IN MIND THE FOLLOWING:

1. FULL UNDERSTANDING OF THE RADIOACTIVE SOURCE TERM AND ITS IMPLICATIONS FOR NUCLEAR REGULATION LIES WELL IN THE FUTURE.

2. ALSO, THERE ARE STILL TOO MANY OPERATING INCIDENTS AND CONSTRUCTION PROBLEMS; THESE INDICATE THAT OUR COMMON GOAL WITH THE NUCLEAR INDUSTRY -- EXCELLENCE -- HAS NOT BEEN FULLY ACHIEVED IN ALL CASES.

WITH RESPECT TO THE FUTURE, I BELIEVE THAT THE ATTAINMENT OF CONFIDENCE IS A KEY OBJECTIVE. LET ME EXPLAIN:

o IF NUCLEAR POWER IS TO CONTINUE TO PLAY AN IMPORTANT ROLE IN AMERICA'S ENERGY MIX, IT MUST BE BACKED BY CONFIDENCE -- CONFIDENCE BOTH IN THE NUCLEAR INDUSTRY AND IN NUCLEAR REGULATION.

- One result of continued incidents and problems at nuclear facilities is a persistent uneasiness about nuclear power on the part of the public, investors, and the Congress. In such a climate, regulatory reactions necessarily increase. When incidents occur we must react.

- The nuclear industry has the job of building nuclear facilities correctly and operating them safely. Therefore, if the industry wants the regulatory reactions to be reduced, it has to reduce the incidents and problems.

- Fewer incidents and problems should also reduce people's uneasiness about nuclear power. In short, the better the industry does its job and the closer it gets to excellence, the more confidence there will be in nuclear power.

- HOWEVER, WE REGULATORS HAVE THE JOB OF MAKING SURE THAT THE NUCLEAR INDUSTRY DOES ITS JOB RIGHT. THUS, THE BETTER WE DO OUR JOB, THE MORE CONFIDENCE THERE WILL BE ALSO.

TO DO OUR JOB BETTER, SOME OF THE MAJOR THINGS I BELIEVE THE NRC NEEDS TO FOCUS ON IN THE FUTURE ARE AS FOLLOWS:

- FIRST OF ALL, TO HELP ASSURE THAT THE PUBLIC WILL CONTINUE TO BE PROTECTED, NRC'S HIGHEST PRIORITY SHOULD BE TO KEEP THE PRESSURE ON THE INDUSTRY TO STRIVE FOR AND ACHIEVE EXCELLENCE IN ALL ASPECTS OF NUCLEAR FACILITY OPERATIONS AND CONSTRUCTION.

- THE U.S. IS NOW CLOSE TO HAVING 100 OPERATING NUCLEAR POWER PLANTS. SINCE ONLY ABOUT A QUARTER OF THAT NUMBER OF PLANTS ARE STILL UNDER CONSTRUCTION, WE HAVE TO REORIENT THE BULK OF OUR ACTIVITIES TO CONCENTRATE ON OPERATIONS.

- IMPROVEMENTS HAVE BEEN MADE IN OUR ABILITY TO REGULATE OPERATING PLANTS, TO LEARN ABOUT INCIDENTS, AND TO LEARN FROM THEM AS WELL. HOWEVER, WE NEED TO GIVE CONTINUING ATTENTION TO THESE OPERATIONS AND TO LEARNING FROM ALL INCIDENTS.

- BECAUSE OF THE GREAT IMPORTANCE OF REACTOR OPERATOR PROFICIENCY AND PROPER MAINTENANCE, I SUGGEST THAT NRC CONSIDER INCREASING ITS REQUALIFICATION EXAMINATIONS OF LICENSED OPERATORS AND ITS MONITORING OF THE NUCLEAR INDUSTRY'S MAINTENANCE PRACTICES.

- NRC ALSO NEEDS TO DEVELOP THE BEST WAYS TO ACT ON THE MANY WARNING SIGNS THAT EXIST BEFORE SERIOUS PROBLEMS DEVELOP. THE GOAL SHOULD BE TO FIND THE ROOT CAUSES AND FIX THEM EARLY-ON.

o NRC SHOULD CONTINUE TO THOROUGHLY INVESTIGATE SERIOUS INCIDENTS OR ACCIDENTS THAT DO OCCUR, AGAIN BY FOCUSING ON THE ROOT CAUSES AND CORRECTIVE ACTIONS NEEDED TO PREVENT RECURRENCE.

o FINALLY, NRC NEEDS TO UNDERSTAND THE EFFECTS OF AGING ON PLANT EQUIPMENT AND OPERATIONS BEFORE AGING CAUSES PROBLEMS AND BEFORE NRC HAS TO DEAL WITH NUMEROUS REQUESTS FOR EXTENSION OF PLANT LIFE.

NOW LET ME TURN TO SOME SUGGESTIONS FOR THE CONGRESS. I WILL BEGIN BY NOTING THAT, WHEN MY TERM IS UP, I WILL HAVE APPEARED AT APPROXIMATELY 70 CONGRESSIONAL HEARINGS. I ALSO WILL HAVE SIGNED APPROXIMATELY 600 LETTERS TO MEMBERS OF THE HOUSE AND SENATE. GIVEN THAT BASE OF EXPERIENCE, I HOPE YOU WILL NOT THINK ME PRESUMPTUOUS IF I PROVIDE THE FOLLOWING THOUGHTS FOR YOU TO CONSIDER AS YOU OVERSEE NRC AND DELIBERATE ON NUCLEAR POWER LEGISLATION:

- One of the bright spots about my job as Chairman has been the ability to observe the outstanding work of many of the government employees at the NRC. We have a truly dedicated and talented staff whose main interest is in fulfilling NRC's responsibility to protect public health and safety. I hope that, in carrying out your oversight of the agency, the Congress can from time-to-time recognize the excellent contributions of NRC's staff.

- Also, NRC must have adequate resources to do its job. During my tenure alone, the Congress has cut our budget requests by several tens of millions of dollars. Ultimately, we can only regulate to the extent we are funded.

- With regard to future legislation, I recommend that you:

  -- Pass some form of the licensing reform legislation that we and others have submitted; and

- -- PASS A FORM OF THE PRICE ANDERSON LEGISLATION THAT ASSURES THE PUBLIC WILL GET PROMPT COMPENSATION FOR VALID CLAIMS IN CASE OF INJURY TO LIFE OR PROPERTY IF A NUCLEAR ACCIDENT OCCURS. (ALTHOUGH EARLIER I SUPPORTED AN APPROACH WITH NO CAP, I WOULD PREFER A PRICE ANDERSON ACT WITH A CAP TO NO ACT AT ALL.)

o LAST, I URGE YOU TO RECONSIDER MY RECOMMENDATION OF A YEAR AGO TO CHANGE THE NRC TO A SINGLE ADMINISTRATOR FORM OF AGENCY.

- -- AS WE MOVE MORE TOWARD AN AGENCY THAT OVERSEES ONLY OPERATING FACILITIES, I BELIEVE WE MOVE FARTHER FROM A COMMISSION FORM OF LEADERSHIP THAT IS BEST SUITED TO DEBATE.
- -- FURTHER, GIVEN THE PRESENT LEGAL RESTRICTIONS ON COMMISSIONERS' ABILITY TO DISCUSS POINTS OF VIEW BEFORE REACHING DECISIONS, EVEN THE VIABILITY OF DEBATE IS IN QUESTION.

-- A SINGLE ADMINISTRATOR IS ALSO MORE LIKELY TO BE ABLE TO IMPLEMENT THE EFFICIENCIES NEEDED IN TIMES OF AGENCY BUDGET REDUCTIONS.

o IF, HOWEVER, THE CONGRESS RETAINS THE PRESENT COMMISSION STRUCTURE FOR THE NRC, I WOULD RECOMMEND CAREFUL REVIEW AND POSSIBLE REVISION OF THE SUNSHINE ACT. IN ITS REVIEW, THE CONGRESS MAY WISH TO CONSIDER THE STUDIES CONDUCTED BY THE ADMINISTRATIVE CONFERENCE AND THE AMERICAN BAR ASSOCIATION.

IN CLOSING, I WANT TO SAY THAT I SINCERELY APPRECIATE THE OPPORTUNITY TO HAVE KNOWN ALL OF YOU AND TO HAVE WORKED SO CLOSELY WITH YOU OVER THESE LAST 4-1/2 TO 5 YEARS.

STATEMENT

OF THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

BEFORE THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

COMMITTEE ON APPROPRIATIONS

UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING

FY 1987 BUDGET

PRESENTED BY NUNZIO J. PALLADINO, CHAIRMAN

SUBMITTED: MARCH 20, 1986

U.S. NUCLEAR REGULATORY COMMISSION

FY 1987 BUDGET TESTIMONY

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, THE COMMISSION APPEARS BEFORE YOU TODAY TO DISCUSS NRC'S FY 1987 BUDGET REQUEST. WITH ME TODAY ARE MY FELLOW COMMISSIONERS, THE ACTING EXECUTIVE DIRECTOR FOR OPERATIONS AND THE DIRECTORS OF THE PRINCIPAL OFFICES OF THE COMMISSION.

OVERVIEW

OUR OMB APPROVED BUDGET REQUEST FOR FISCAL YEAR 1987 IS FOR $405 MILLION. THIS IS $13 MILLION BELOW OUR FY 1986 APPROPRIATION PRIOR TO ANY REDUCTION RESULTING FROM THE PROVISIONS OF THE BALANCED BUDGET AND EMERGENCY DEFICIT CONTROL ACT OF 1985 (PUBLIC LAW 99-177) AND $43 MILLION BELOW OUR FY 1985

APPROPRIATION. OUR STAFFING CEILING IS ALSO BEING REDUCED BY 122 FULL-TIME EQUIVALENT STAFF.

APPENDIX A TO OUR TESTIMONY GRAPHICALLY DEMONSTRATES HOW ACTUAL PURCHASING POWER HAS DECREASED EVERY YEAR SINCE 1981. THE PAST TWO YEARS HAVE SEEN THE MOST SIGNIFICANT REDUCTIONS.

PUBLIC LAW 99-177 WILL REDUCE NRC AN ADDITIONAL $18 MILLION IN FY 1986. A REDUCTION OF THIS MAGNITUDE, ALMOST HALF-WAY THROUGH THE FISCAL YEAR, WILL HAVE A SIGNIFICANT IMPACT ON THE PROGRAMS NECESSARY TO SUPPORT OUR REGULATORY RESPONSIBILITIES. THE COMMISSION IS CURRENTLY EVALUATING THE SPECIFIC IMPACTS THAT WILL RESULT IN FY 1986. FURTHERMORE, ALTHOUGH THE FUTURE IMPACT PUBLIC LAW 99-177 WILL HAVE ON NRC IS NOT YET KNOWN, I CAN TELL YOU THAT, IF THE RECENT HIGHLY PUBLICIZED PROJECTIONS ARE ACCURATE, THE NUCLEAR REGULATORY COMMISSION'S PROGRAMS TO ENSURE THE ADEQUATE PROTECTION OF THE PUBLIC HEALTH AND SAFETY WOULD BE SERIOUSLY JEOPARDIZED IN FY 1987.

WHILE WE RECOGNIZE AND ARE SUPPORTIVE OF THE NEED FOR BUDGET AUSTERITY, THE CONGRESS AND THE PUBLIC MUST RECOGNIZE THAT WITH THESE REDUCED RESOURCE LEVELS THE NRC WILL BE PERFORMING LESS REGULATORY OVERSIGHT ACTIVITIES, NOT MORE. OUR CAPABILITY TO RESPOND TO AND RESOLVE ISSUES FROM UNPLANNED EVENTS SUCH AS THOSE AT DAVIS-BESSE, SAN ONOFRE, RANCHO SECO, TVA, AND KERR-MCGEE IN A COMPREHENSIVE AND TIMELY MANNER WILL BE DIMINISHED. AT THE SAME TIME, ANY FORWARD-LOOKING ACTIONS AND PROGRAMS NECESSARY TO MEET FUTURE ISSUES AND CHALLENGES HAVE BEEN REDUCED OR ELIMINATED.

THERE WILL SOON BE OVER ONE HUNDRED NUCLEAR POWER PLANTS LICENSED FOR OPERATION. RECENT EVENTS HAVE DEMONSTRATED THAT THE RESOURCES NEEDED FOR REGULATING AN OPERATING REACTOR CAN BE ABOUT AS MUCH AS FOR LICENSING A REACTOR. AFTER THE OPERATING LICENSE IS ISSUED, RESOURCES ARE STILL NEEDED TO PROCESS LICENSE AMENDMENTS, CONDUCT RELATED SAFETY EVALUATIONS, LICENSE PLANT OPERATORS, AND RESPOND TO AND EVALUATE THE IMPACT OF UNANTICIPATED EVENTS. IN ADDITION, MORE OPERATING REACTORS WILL REQUIRE MORE RESOURCES FOR TASKS, SUCH AS CONDUCTING THE RESIDENT AND REGION-BASED INSPECTION PROGRAMS AND ANALYZING OPERATIONAL DATA.

APPENDIX B TO OUR TESTIMONY SUMMARIZES THE AGENCY'S BUDGET REQUEST BY MAJOR BUDGET CATEGORIES. THE REDUCTIONS VARY IN MAGNITUDE, BUT ALL MAJOR PROGRAMS ARE AFFECTED. I WILL BRIEFLY SUMMARIZE EACH PROGRAM. PLEASE NOTE THAT THE TABLE IN APPENDIX B DOES NOT REFLECT THE DETAIL RESULTING FROM BUDGET CUTS DUE TO PUBLIC LAW 99-177.

REACTOR REGULATION

THE NUCLEAR REACTOR REGULATION PROGRAM IS IN TRANSITION. WHILE DEMAND FOR RESOURCES NEEDED TO REVIEW NEW LICENSE APPLICATIONS DECREASES, THE DEMAND FOR RESOURCES NEEDED TO EVALUATE SAFETY-RELATED LICENSING ACTIONS, RESPOND TO EVENTS, AND PERFORM OVERALL PROJECT MANAGEMENT IS INCREASING WITH THE NUMBER OF REACTORS COMING ON-LINE. FOR EXAMPLE, ABOUT 600-700 MORE LICENSING ACTIONS

ARE ANTICIPATED FOR OPERATING PLANTS IN FY 1987 THAN WERE ACTUALLY RECEIVED IN FY 1985.

IN FY 1987, WE WILL CONTINUE TO WORK ON OPERATING LICENSE AND STANDARD PLANT APPLICATIONS STILL PENDING. WE ALSO INTEND TO CONDUCT ACTIVE PROGRAMS TO OVERSEE THE SAFE OPERATION OF OPERATING PLANTS, TO LICENSE REACTOR OPERATORS, TO CONTINUE WORKING ON UNRESOLVED AND HIGH PRIORITY GENERIC SAFETY AND HUMAN FACTORS ISSUES, AND WORK ON INITIATIVES RELATED TO SEVERE ACCIDENTS AND SAFETY GOALS.

FY 1987 BUDGET CUTS IN THE NUCLEAR REACTOR REGULATION PROGRAM WILL REDUCE OR ELIMINATE IMPROVEMENTS IN SUCH AREAS AS RISK ASSESSMENT, HUMAN FACTORS, AND ADVANCED REACTOR CONCEPTS. FURTHER, WE WILL NOT BE ABLE TO IMPLEMENT THE INTEGRATED SAFETY ASSESSMENT PROGRAM AS A SEPARATE PROGRAM. ALSO, OUR ABILITY TO RESOLVE MAJOR UNANTICIPATED PROBLEMS AT OPERATING FACILITIES AND THOSE UNDER LICENSING REVIEW WILL BE SEVERELY CONSTRAINED.

RESEARCH

IN TERMS OF CONSTANT DOLLARS, OUR RESEARCH BUDGET WILL BE LOWER IN FY 1987 THAN IT WAS WHEN THE AGENCY WAS FORMED IN 1975. BETWEEN 1981 AND 1987, THE NUCLEAR REGULATORY RESEARCH PROGRAM WILL HAVE BEEN REDUCED BY MORE THAN $110 MILLION, ABOUT 53 PERCENT. JOINT PROGRAMS WITH OTHER PARTIES AND IMPROVED OPERATING ECONOMICS CANNOT MAKE UP FOR THESE REDUCTIONS OVER THE YEARS. THE REDUCTIONS IN THE FY 1987 RESEARCH BUDGET WILL MEAN AN END TO SOME PROGRAMS AND SIGNIFICANT DELAYS IN OR DEFERRAL OF OTHERS.

THE ABSENCE OF NEEDED SAFETY INFORMATION WILL LEAD TO GREATER CONSERVATISM IN THE REGULATORY PROCESS AND COULD LEAD TO PLANT SHUTDOWNS AND POWER REDUCTIONS. IN THE LONG RUN, IT COULD COST THE PUBLIC MORE BY NOT ADEQUATELY FUNDING THE NRC RESEARCH PROGRAM.

THE NRC RESEARCH PROGRAM IS THE PRINCIPAL U.S. GOVERNMENT PROGRAM OF NUCLEAR SAFETY RESEARCH AND IS AN ESSENTIAL PART OF OUR REGULATORY PROCESS. IT PROVIDES US WITH THE SOUND TECHNICAL INFORMATION WE NEED TO DEAL EFFECTIVELY WITH COMPLEX TECHNICAL ISSUES IN REACTOR REGULATION, INSPECTION, AND NUCLEAR MATERIAL SAFETY AND SAFEGUARDS.

A MAJOR FEATURE OF THE RESEARCH PROGRAM IS ITS EMPHASIS ON SAFETY AT OPERATING FACILITIES WHERE PROBLEMS CONTINUE TO ARISE. PROBLEMS WITH CORROSION, RADIATION EMBRITTLEMENT, AND FATIGUE HAVE RAISED SPECIFIC QUESTIONS ABOUT THE CONTINUED SAFETY OF SOME CURRENTLY OPERATING PLANTS. OPERATIONAL PROBLEMS INCLUDE CRACKED PIPING AT BOILING WATER REACTORS, STEAM GENERATOR DEGRADATION AT PRESSURIZED WATER REACTORS, DEFECTIVE VALVES AND RELAYS, AND INADEQUATE MEANS FOR DETECTING AND CHARACTERIZING FLAWS.

SOME OF THESE QUESTIONS ARE BEING RESOLVED BY RESEARCH AND REGULATORY ACTION, BUT MORE QUESTIONS ARE LIKELY TO CONTINUE TO

ARISE AS PLANTS MATURE AND TECHNOLOGY EVOLVES. THE NRC AS WELL AS INDUSTRY MUST BE PREPARED FOR THESE AND OTHER NEW SAFETY ISSUES. AS SUCH, A STABLE, PROPERLY BALANCED RESEARCH PROGRAM IS ESSENTIAL FOR THE COMMISSION TO CARRY OUT ITS RESPONSIBILITIES FOR EFFECTIVE NUCLEAR SAFETY REGULATION.

NRC RESEARCH EFFORTS PLANNED FOR FY 1987 WILL FOCUS PRIMARILY ON:

- THE STUDY OF PLANT AGING AND DETERIORATION OF EQUIPMENT AND STRUCTURES IMPORTANT TO SAFE OPERATION;
- EVALUATION OF RECENT SOURCE-TERM WORK TO DEVELOP CRITERIA FOR EXAMINATION OF INDIVIDUAL PLANTS AND TO IDENTIFY REGULATIONS THAT COULD BE AFFECTED BY NEW SOURCE-TERM KNOWLEDGE;
- SEVERE ACCIDENT SEQUENCE ANALYSIS, DAMAGED FUEL, FISSION PRODUCT RELEASE AND OTHER RESEARCH NEEDED TO PROVIDE A SOUND TECHNICAL BASIS FOR IMPLEMENTATION OF THE SEVERE ACCIDENT POLICY;

- ASSESSMENT OF COMPUTER CODES USED TO EVALUATE THE SAFETY RESPONSE TO A WIDE RANGE OF TRANSIENTS AND ACCIDENTS;
- SEISMIC ANALYSIS, AND
- DEVELOPMENT OF METHODS AND TOOLS FOR EVALUATING DOE'S PROPOSED NUCLEAR WASTE REPOSITORY.

INSPECTION AND ENFORCEMENT

THE INSPECTION AND ENFORCEMENT (IE) PROGRAM WILL CONTINUE TO EMPHASIZE ON-SITE INSPECTION OF REACTORS. IT WILL PROVIDE FOR A SECOND RESIDENT INSPECTOR AT MOST OPERATING SITES AND WILL CONTINUE THE ASSIGNMENT OF AT LEAST TWO RESIDENT INSPECTORS AT ALL CONSTRUCTION AND PRE-OPERATIONAL TESTING SITES. WE ALSO INTEND TO CONTINUE TO FOCUS OUR ATTENTION ON OPERATING EXPERIENCE TO IDENTIFY ISSUES OF GENERIC SAFETY SIGNIFICANCE AND LICENSEES REQUIRING INCREASED REGULATORY ATTENTION.

WORK ON THE QUALITY ASSURANCE INITIATIVES DESCRIBED IN THE STAFF'S REPORT ON IMPROVING QUALITY AND THE ASSURANCE OF QUALITY IN THE DESIGN AND CONSTRUCTION OF NUCLEAR POWER PLANTS, SUBMITTED TO THE CONGRESS IN APRIL 1984, WILL BE SEVERELY CURTAILED IN FY 1986 AS A RESULT OF PUBLIC LAW 99-177. REDUCTIONS WILL INCLUDE INITIATIVES RELATED TO FUTURE APPLICATIONS FOR CONSTRUCTION. TECHNICAL ASSISTANCE TO INSPECTIONS OF NUCLEAR SUPPLIERS AND DESIGNERS WILL BE REDUCED BY 50 PERCENT IN FY 1986. THERE WILL ONLY BE MINIMUM FUNDING TO SUPPORT TEAM INSPECTIONS OF MAJOR NUCLEAR POWER PLANT MODIFICATIONS DURING OUTAGES.

FUNDING REDUCTIONS WILL ALSO OCCUR IN FYS 1986 AND 1987 IN THE SPECIAL TEAM INSPECTION PROGRAMS (CONSTRUCTION APPRAISAL TEAM, INTEGRATED DESIGN INSPECTION PROGRAM AND INDEPENDENT DESIGN VERIFICATION PROGRAM) FOR CONSTRUCTION SITES, IN THE EMERGENCY PREPAREDNESS PROGRAM, AND IN TECHNICAL SUPPORT TO THE STAFF FOR PROBLEM FACILITIES IN BOTH CONSTRUCTION AND OPERATION. OTHER

Inspection and Enforcement programs will be retained essentially at their FY 1986 levels.

Nuclear Material Safety and Safeguards

During the remainder of FY 1986 and in FY 1987, the nuclear material safety and safeguards (NMSS) Program will focus on several priority activities.

Specifically, we will continue to carry out our extensive regulatory responsibilities under the Nuclear Waste Policy Act and the Uranium Mill Tailings Radiation Control Act. We will be examining all aspects of the recent uranium hexafloride incident at the Kerr-McGee Sequoyah facility to determine if any regulatory changes are appropriate. We will be examining the adequacy of NRC safeguards requirements at licensed facilities in light of an increased sensitivity to current terrorist activities elsewhere in the world. And, we will begin executing our responsibilities

UNDER THE LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985.

HOWEVER, YOU SHOULD BE AWARE THAT THE NRC FY 1987 BUDGET REQUEST DOES NOT CONTAIN RESOURCES TO IMPLEMENT THE RECENTLY ENACTED LOW-LEVEL WASTE ACT AMENDMENTS. WE ARE CURRENTLY EXAMINING WHERE WE CAN REPROGRAM RESOURCES FROM OTHER IMPORTANT ACTIVITIES WITHIN THE AGENCY.

OTHER IMPORTANT NMSS EFFORTS IN FY 1987 INCLUDE IDENTIFYING AND RESOLVING ISSUES ASSOCIATED WITH SPENT FUEL SHIPMENT AND STORAGE, RESPONDING TO UNANTICIPATED EVENTS INVOLVING FUEL CYCLE FACILITIES AND MATERIALS LICENSEES, COMPLETION OF LICENSING CASES FOR FUEL CYCLE FACILITIES AND THOUSANDS OF MATERIAL LICENSEES, AND THE CONDUCT OF A LIMITED NUMBER OF OPERATING REACTOR SAFEGUARDS REGULATORY EFFECTIVENESS REVIEWS.

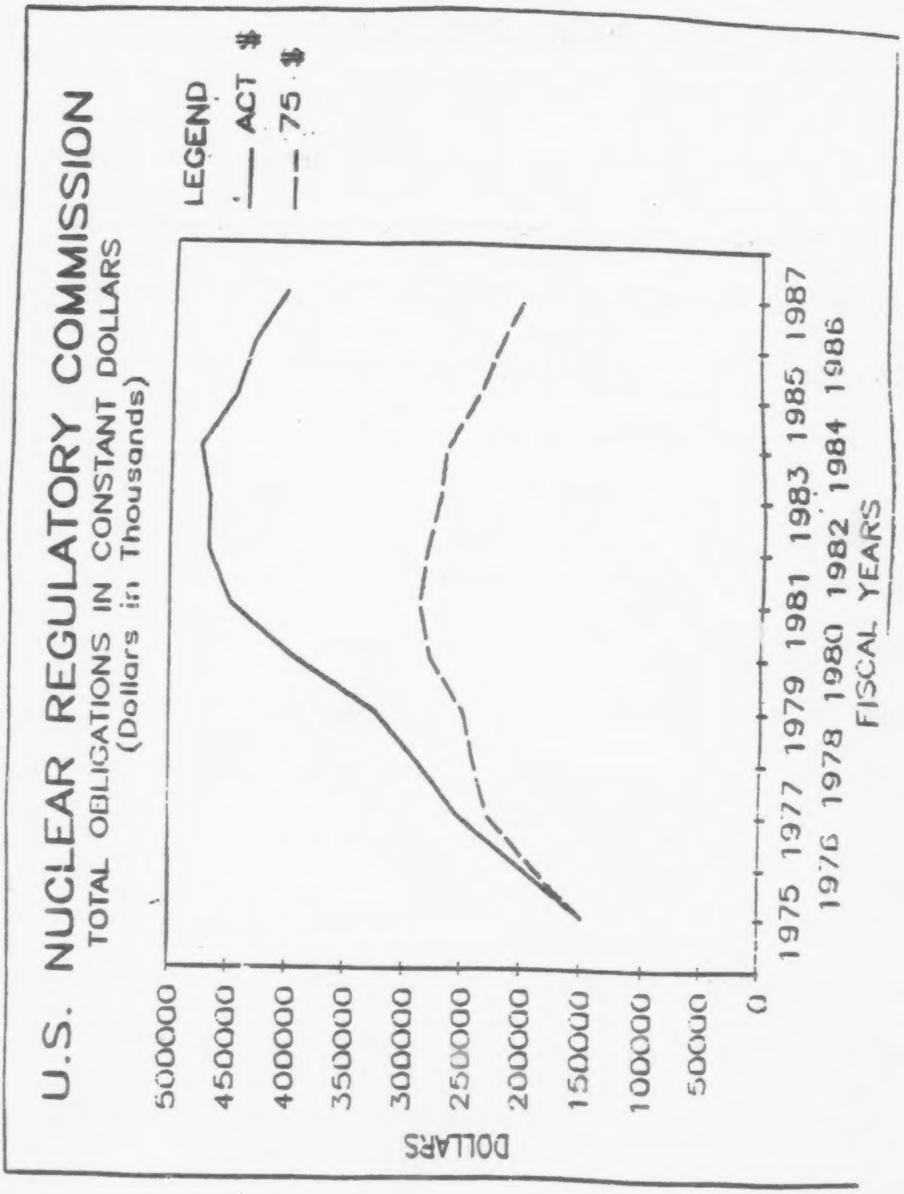
BUILDING CONSOLIDATION

OF URGENT INTEREST TO THE COMMISSION IS THE MATTER OF NRC BUILDING CONSOLIDATION. AS YOU KNOW THE NRC STAFF HAS BEEN HOUSED IN TEN BUILDINGS IN ROCKVILLE, BETHESDA, SILVER SPRING AND THE DISTRICT. WE APPRECIATE THE COMMITTEE'S CONTINUED SUPPORT IN OUR QUEST TO CONSOLIDATE AND HOPE OUR EFFORTS WILL BEAR FRUIT.

CONCLUSION

THE DETAILS OF OUR BUDGET REQUEST ARE CONTAINED IN OUR BUDGET SUBMISSION, WHICH HAS ALREADY BEEN PROVIDED TO THE COMMITTEE. APPENDIX C PROVIDES EXAMPLES OF NRC ACCOMPLISHMENTS IN FY 1985.

IN CLOSING, LET ME REEMPHASIZE THAT THE BUDGET REQUEST SUBMITTED TO CONGRESS REPRESENTS A MINIMUM PROGRAM IN THE VIEW OF THE COMMISSION. WE URGE YOUR STRONG SUPPORT FOR THE FULL AMOUNT OF OUR REQUEST.



U.S. NUCLEAR REGULATORY COMMISSION
TOTAL OBLIGATIONS IN CONSTANT DOLLARS
(Dollars in Thousands)

APPENDIX B

BUDGET RESOURCE SUMMARY 1/

PROGRAMS	FY 1985		FY 1986 2/		FY 1987 3/	
	FTE	$	FTE	$	FTE	$
Nuclear Reactor Regulation	711	86.5	716	83.8	683	79.8
Inspection and Enforcement	1,105	94.6	1,140	98.2	1,135	98.6
Nuclear Mat'l Safety and Safeguards	362	40.0	370	41.0	360	39.5
Nuclear Regulatory Research	226	150.0	207	134.7	180	113.5
Program Technical Support	365	30.8	355	30.3	330	30.5
Program Direction and Admin.	729	43.5	703	43.3	681	43.1
	3,498	445.4	3,491	431.3	3,369	405.0

1/ Dollars are expressed in millions.

2/ Estimates do not reflect the $18 million reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985.

3/ Deficit Control Act reductions are not known at this time.

APPENDIX C

EXAMPLES OF FY 1985 ACCOMPLISHMENTS

- ISSUED INITIAL LICENSES (RESTRICTED TO 5% POWER) FOR 10 REACTORS, 8 OF WHICH WERE GRANTED FULL-POWER AUTHORIZATIONS. IN ADDITION, 3 PREVIOUSLY LICENSED REACTORS RECEIVED FULL-POWER AUTHORIZATIONS.

- DEALT WITH PROBLEMS AND UNANTICIPATED EVENTS INVOLVING REACTORS UNDER CONSTRUCTION, OPERATING REACTORS, MATERIALS LICENSEES AND FUEL CYCLE FACILITIES, INCLUDING INITIATING A PROGRAM TO RESPOND TO REACTOR INCIDENTS.

- CARRIED OUT OUR RESPONSIBILITIES UNDER THE NUCLEAR WASTE POLICY ACT.

- THE COMMISSION ISSUED:
  - SEVERE ACCIDENT POLICY STATEMENT;
  - NEW BACKFIT RULE TO IMPROVE METHODS FOR ADMINISTERING THE IMPOSITION OF NEW REQUIREMENTS ON LICENSEES;
  - POLICY STATEMENT ON TRAINING;
  - FINAL RULE ON PRESSURIZED THERMAL SHOCK;
  - PROPOSED RULE FOR PUBLIC COMMENT ON CRITERIA FOR DECOMMISSIONING FACILITIES;
  - PROPOSED POLICY STATEMENT FOR REGULATION OF ADVANCED NUCLEAR POWER PLANTS.

- PROVIDED CONGRESS WITH REVISED LICENSING AND STANDARDIZATION LEGISLATION AND SUBMITTED SIX OTHER MISCELLANEOUS LEGISLATIVE PROPOSALS FOR CONGRESSIONAL CONSIDERATION.

- MONITORED AND TOOK APPROPRIATE REGULATORY ACTION ON TMI CLEANUP ACTIVITIES.

Statement of Lando W. Zech, Jr. Commissioner

U.S. Nuclear Regulatory Commission

I support the budget of $405 million for Fiscal Year '87, as submitted. I believe we can get the job done with this budget.

I would like to make a point about consolidation and the importance of consolidating the scattered segments of our agency. As you know, we are located in 11 different buildings throughout the Washington, D.C., area. We have been trying very hard to get consolidated.

If we can consolidate our Commission and staff, I do believe that we will be taking a long step forward towards assuring that we will continue to be able to do our job with less budgetary resources. So I think it's important in my view, that we consolidate.

Standardization is something that is very much needed, in my judgement, in the nuclear industry in our country. I believe that standardization would bring about improvements in safety, improvements in reliability, improvements in economic use of nuclear power in our country. And without going into great detail, let me just quickly enumerate why I think so:

> First of all, standardization will allow us to focus on designs that a consensus would agree are excellent designs. It would focus on training and allow us to train people so that they can go from one plant to another.
>
> It will allow us to use lessons learned better than we do now, with so many different utilities and plants involved in it. Lessons learned in standardized plants can be translated quickly, understood quickly, and applied.
>
> It would increase maintenance efficiency because when plants are built the same, as in many other industries in our country, maintenance becomes understood better, practiced better, and works better.
>
> Plants would be operated better. Efficiency of operation is so important. We have fine operators in our country. I've had the opportunity so far to visit 58 different plants in our country. One thing that I've been impressed with is the operators themselves. On the other hand, if the plants were designed, standardized, the operators would, indeed, be able to do an even better job, in my judgment.
>
> Standardization will also contribute to uniformity in regulations such as, for example, standardized and simpler technical specification and more consistent inspection practices.
>
> And lastly, if the plants were standardized, I'm convinced that we would have more standardized management, more exchange of views

throughout the various utilities. Management of the customized plants throughout our country differs now. It is different in the different utilities and in the way they practice their management.

The NRC is taking steps to update its Standardization Policy, but that does not mean that we can get the whole job done administratively. The NRC has and will use its authority to encourage standardization and will promulgate a policy that includes some regulatory incentives in the near future. However, I think that it is very important for the Congress to consider and pass a legislative proposal on standardization. This would establish a national policy on standardization and thereby send a needed message to the industry, to the utilities, the vendors, the architect engineers, the constructors.

Once a national policy is established and a licensing and regulatory system is in place to implement it, it will be up to the industry and the marketplace to then take the initiative to select the standardized option they prefer.

For all of these reasons I believe that enactment of our legislative proposal on standardization or a substantially similar proposal is vitally needed.

In summary, standardization is clearly needed in our country if the nuclear option is to survive, which I think it should and must.

NUREG-1100
Volume 2

BUDGET ESTIMATES FISCAL YEAR 1987

Appropriation: Salaries and Expenses

February 1986

U.S. Nuclear Regulatory Commission

CONTENTS

Page

Summary 1

Nuclear Reactor Regulation Programs 11

- Chart of Program Support Funds and Staff Facing Page 11
- Description of Programs 12
- Operating Reactors Program 13
- Systematic Safety Evaluation of Operating Reactors Program ... 14
- Operator Licensing Program 15
- Casework Program (licensing new reactors) 17
- Safety Technology Program 18
  - Unresolved Safety Issues 18
  - Generic Issues 18
  - Human Factors Issues 18
  - Regulatory Improvements 19
  - Advanced Reactor Concepts................................ 19
- TMI-2 Cleanup Program 20
- Management Direction and Support Program 21

Nuclear Material Safety and Safeguards Programs 23

- Chart of Program Support Funds and Staff Facing Page........ 23
- Description of Programs 24
- Fuel Cycle Facility and Nuclear Material Safety Program 26
  - Fuel Cycle Facility and Nuclear Materials Licensing 27
  - General Licenses 27
  - Licensing of Monitored Retrievable Storage Facility 27
  - Shipments of Spent Fuel and High-Level Radioactive Waste 28
  - Dry Storage of Spent Fuel 28
  - Demonstration of High-Level Waste Solidification 28
  - Technical Assistance to States 29
  - Management of Low-Level Waste Prior to Ultimate Disposal 29
- Safeguards Program 30
  - Reviews of Safeguards at Operating Reactors 31
  - Safeguards of Licensed Facilities and Transportation 31
  - Safeguards Support of the Nuclear Waste Policy Act 31
  - IAEA Safeguards Program Participation 31
- High-Level Waste Management Program 32
  - Prelicensing Consultation 33
  - Review of Site Characterization Plans 33
  - Regulatory Guidance 33
- Low-Level Waste Management and Uranium Recovery Program .. 35
  - Disposal of Low-Level Radioactive Waste 35
  - Licensing Uranium Recovery Facilities 36
  - Uranium Mill Tailings Remedial Action Program 37
  - Technical Assistance to States 37
- Management Direction and Support Program 38

Page

Inspection and Enforcement Programs 39

Chart of Program Support Funds and Staff Facing Page 39
Description of Programs 40
Power Reactor Caseload Forecast Table 42
Reactor Construction Program 43
  Resident Inspectors 43
  Region-Based Specialists 44
  Construction Appraisal Team 44
Reactor Operations Program 45
  Resident Inspectors 45
  Region-Based Specialists 46
  Performance Appraisal Teams 46
  Emergency Preparedness Reviews 47
Vendor and Quality Assurance Program 48
  Vendor Program 48
  Quality Assurance Program 49
Enforcement, Technical Support and Incident Response Program 51
  Enforcement 51
  Systematic Assessment of Licensee Performance 51
  Support for Problem Facilities, Allegations and Investigations 52
  Licensee Event Analysis and Generic Communications 52
  Incident Response Program 52
Fuel Cycle and Materials Program 53
  Fuel Facilities Inspections 53
  Materials Inspections 53
  Decommissioning and Closeout Radiation Surveys 54
Specialized Technical Training Program 55
Management Direction and Support Program 56

Nuclear Regulatory Research Programs 57

Chart of Program Support Funds and Staff Facing Page........ 57
Description of Programs 58
Reactor Engineering Program 61
  Aging and Deterioration of Operating Reactors............ 61
  Effects of Earthquakes on Operating Plants 62
  Reactor Pressure Vessel Safety 63
  Adequacy of Safety Equipment Under Abnormal Conditions 63
  Pipe Cracking and the Leak Before-Break Principle 64
  Steam Generator Inspection and Repair 65
Thermal Hydraulic Transients Program 66
  Integral Facilities 66
  Separate Effects 67
  Transient Models and Codes 68
Accident Evaluation Program 70
  Severe Accident Analysis 71
  Damaged Fuel 71
  Containment Loading 72
  Fission Product Behavior 72

Page

Nuclear Regulatory Research Programs (continued)

Reactor Operations and Risk Program 74
    Reliability and Risk Methodology 75
    Data and Uncertainties 75
    Regulatory and Inspection Applications 76
    Severe Accident Risk 77
    Management of Rulemakings 77
Waste Management, Earth Sciences and Health Program 79
    High-Level Waste 79
    Low-Level Waste 80
    Earth Sciences 81
    Health Effects and Radiation Protection 82
Management Direction and Support Program 83

Program Technical Support 85

Advisory Committee on Reactor Safeguards 86
Atomic Safety and Licensing Board Panel 87
Atomic Safety and Licensing Appeal Panel 87
Office of Investigations 88
Office of the Executive Legal Director 89
Office of International Programs 90
Office of State Programs 91
Office of Analysis and Evaluation of Operational Data 92

Program Direction and Administration 95

The Commissioners and Staff 96
Office of the Secretary 96
Office of the Inspector and Auditor 97
Office of the General Counsel 97
Office of Public Affairs 98
Office of Policy Evaluation 99
Office of Congressional Affairs 99
Office of Executive Director for Operations 100
Office of Small and Disadvantaged Business Utilization and Civil Rights 101
Office of Resource Management 102
    Budget and Analysis 102
    Accounting and Finance 103
    Automated Information Services 103
Office of Administration 103
    Organization and Personnel 104
    Facilities and Operations Support 104
    Technical Information and Document Control 104
    Rules and Records 105
    Contracts 105
    Security 105
    License Fee Management 106
    Management Development and Training 106
    Occupational Safety and Health 106

Page

Special Supporting Tables 107

Legislative Program Projections 107
Consulting Services 108
Summary of Headquarters - Regional Resources 111

SALARIES AND EXPENSES SUMMARY

Estimates of Appropriation

The budget estimates for Salaries and Expenses for FY 1987 provide for obligations of $405,000,000[1/] to be funded in total by a new appropriation.

Estimates of Obligations and Outlays

This section provides for the summary of obligations by program, the summary of financing these obligations, the analysis of outlays, obligations by function, the proposed appropriation language, and an analysis of the appropriation language.

The summaries of obligations include the Reimbursable program. It should be noted that the obligations related to this program are not financed by NRC's appropriated funds, but solely through reimbursable agreements with other Federal agencies.

The agency will deposit revenues derived from the license and inspection fees and enforcement actions to Miscellaneous Receipts of the Treasury.

The Summary of Obligations by Program indicates the total obligations for Direct and Reimbursable Programs for FY 1985, FY 1986, and FY 1987. The detailed justifications for direct program activities are presented in the same order as they appear in this summary table.

The FY 1986 Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

1/ Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.

SUMMARY OF OBLIGATIONS

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Direct Program:			
Nuclear Reactor Regulation..........	$ 86,521	$ 83,760	$ 79,840
Nuclear Material Safety and Safeguards....................	40,026	40,970	39,520
Inspection and Enforcement..........	94,586	98,240	98,540
Nuclear Regulatory Research.........	149,959	134,710	113,460
Program Technical Support...........	30,755	30,290	30,525
Program Direction & Administration...	43,570	43,342	43,115
Total Obligations - Direct Program..................	$445,417	$431,312	$405,000
Reimbursable Program................	77	500	500
Total Obligations....................	$445,494	$431,812	$405,500
Offsetting collections from Federal Funds............................	-65	-500	-500
Recovery of prior year obligations...	-4,842	-13,312	
Unobligated balance, start of year...	-5,699		
Unobligated balance, end of year....	13,312		
Budget Authority..................	$448,200	$418,000	$405,000

1/ Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

FINANCING OF OBLIGATIONS

The financing of the estimated total obligations of $405,000,000 proposed in the budget estimate for FY 1987 is summarized in the following table:

Summary of Financing

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Sources of Funds Available for Obligations:			
Recovery of prior year obligations...	$ 4,842	$ 0	$ 0
Unobligated balance, start of year...	5,699	13,312	0
Appropriated to NRC................	448,200	418,000	405,000
Subtotal	$458,741	$431,312	$405,000
Less: Unobligated balance, end of year..............................	13,312	0	0
Total Obligations - Direct Program	$445,429	$431,312	$405,000

OUTLAYS FOR SALARIES AND EXPENSES

Outlays for FY 1987 are estimated at $418,000,000. The following analysis identifies funds available for outlays for each of the budget periods. This amount less the unexpended balance at the end of the period equals the outlays.

Outlay Analysis

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Unexpended balance, beginning of year:			
Obligated	$163,978	$136,913	$126,225
Unobligated	5,699	13,312	0
Appropriation to NRC	448,200	418,000	405,000
Total Funds Available for Outlays	$617,877	$568,225	$531,225
Unexpended balance, end of year:			
Obligated	-136,913	-126,225	-113,225
Unobligated	-13,312	0	0
Total Outlays	$467,652	$442,000	$418,000

1/ Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

SUMMARY OF BUDGET

OBLIGATIONS BY FUNCTION

	Actual FY 1985	Estimate[1/] FY 1986	Estimate FY 1987
Direct Program:			
Salaries and Benefits................	$172,171	$171,500	$168,400
Program Support....................	213,758	193,780	170,760
Administrative Support..............	50,211	56,527	56,340
Travel............................	9,277	9,505	9,500
Total Obligations - Direct Program....................	$445,417	$431,312	$405,000
Reimbursable Program...............	77	500	500
TOTAL OBLIGATIONS.............	$445,494	$431,812	$405,500

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

PROPOSED LANGUAGE - SALARIES AND EXPENSES

The proposed language is as follows:

Salaries and Expenses

For necessary expenses of the Commission in carrying out the purposes of the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act, as amended, including the employment of aliens; services authorized by 5 U.S.C. 3109; publication and dissemination of atomic information; purchase, repair, and cleaning of uniforms; official representation expenses (not to exceed $8,000); reimbursements to the General Services Administration for security guard services; hire of passenger motor vehicles and aircraft, $405,000,000 to remain available until expended: Provided, That from this appropriation, transfer of sums may be made to other agencies of the Government for the performance of the work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred: Provided further, That moneys received by the Commission for the cooperative nuclear safety research program and the material access authorization program may be retained and used for salaries and expenses associated with those programs, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended. (Energy and Water Development Appropriation Act, 1986)

Analysis of Proposed FY 1987 U.S. Nuclear Regulatory Commission Appropriation Language

1. FOR NECESSARY EXPENSES OF THE COMMISSION IN CARRYING OUT THE PURPOSES OF THE ENERGY REORGANIZATION ACT OF 1974, AS AMENDED, AND THE ATOMIC ENERGY ACT, AS AMENDED:

   42 U.S.C. 5841 et seq.

   42 U.S.C. 5841 et seq., the Energy Reorganization Act of 1974, established the Nuclear Regulatory Commission to perform all the licensing and related regulatory functions of the Atomic Safety and Licensing Board Panel, the Atomic Safety and Licensing Appeal Board, and the Advisory Committee on Reactor Safeguards, and to carry out the performance of other functions including research, for the purpose of confirmatory assessment related to licensing and other regulation, other activities, including research related to nuclear material safety and regulation under the provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 5801 et seq.).

2. EMPLOYMENT OF ALIENS:

   42 U.S.C. 2201 (d) of the Atomic Energy Act of 1954, as amended, authorizes the Commission to employ persons and fix their compensation without regard to civil service laws.

3. SERVICES AUTHORIZED BY 5 U.S.C. 3109:

   5 U.S.C. 3109 provides in part that the head of an agency may procure by contract the temporary or intermittent services of experts or consultants when authorized by an appropriation.

4. PUBLICATION AND DISSEMINATION OF ATOMIC INFORMATION:

   42 U.S.C. 2161 b

   42 U.S.C. 2161 b directs the Commission that it shall be guided by the principle that the dissemination of scientific and technical information related to atomic energy should be permitted and encouraged so as to provide that interchange of ideas and criticism which is essential to scientific and industrial progress and public understanding and to enlarge the fund of technical information.

5. PURCHASE, REPAIR AND CLEANING OF UNIFORMS:

5 U.S.C. 5901

5 U.S.C. 5901 authorizes the annual appropriation of funds to each agency of the government as a uniform allowance.

6. OFFICIAL REPRESENTATION EXPENSES:

47 Comp. Gen. 657

43 Comp. Gen. 305

This language is required because of the established rule restricting an agency from charging appropriations with the cost of official representation unless the appropriations involved are specifically available therefor. Congress has appropriated funds for official representation expenses to the NRC and NRC's predecessor AEC each year since FY 1950.

7. REIMBURSEMENT OF THE GENERAL SERVICES ADMINISTRATION FOR SECURITY GUARD SERVICES:

34 Comp. Gen. 42

This language is required because, under the provisions of the Federal Property and Administrative Services Act of 1949, specific appropriation is made to GSA for carrying out the function of protecting public buildings and property, and, therefore, NRC appropriations not specifically made available therefor may not be used to reimburse GSA for security guard services.

8. HIRE OF PASSENGER MOTOR VEHICLES AND AIRCRAFT:

31 U.S.C. 638a

31 U.S.C. 638a provides in part - "(a) unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government...."

9. TO REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 718

31 U.S.C. 718 provides in part that no specific or indefinite appropriation shall be construed to be available continuously without reference to a fiscal year unless it is made in terms expressly providing that it shall continue to be available beyond the fiscal year for which the appropriation Act in which it is contained makes provision.

10. THAT FROM THIS APPROPRIATION, TRANSFERS OF SUMS MAY BE MADE TO OTHER AGENCIES OF THE GOVERNMENT FOR THE PERFORMANCE OF THE WORK FOR WHICH THIS APPROPRIATION IS MADE, AND IN SUCH CASES, THE SUMS SO TRANSFERRED MAY BE MERGED WITH THE APPROPRIATION TO WHICH TRANSFERRED:

    64 Stat 765, Sec. 1210

    64 Stat 765, Sec. 1210 prohibits the transfer of appropriated funds from one account to another or working fund except as authorized by law.

11. THAT MONEYS RECEIVED BY THE COMMISSION FOR THE COOPERATIVE NUCLEAR SAFETY RESEARCH PROGRAMS AND THE MATERIAL ACCESS AUTHORIZATION PROGRAM MAY BE RETAINED AND USED FOR SALARIES AND EXPENSES ASSOCIATED WITH THOSE PROGRAMS, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED:

    26 Comp. Gen. 43

    2 Comp. Gen. 775

    Appropriated funds may not be augmented with funds from other sources unless specifically authorized by law.

This page intentionally left blank

NUCLEAR REACTOR REGULATION PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations............................ $ 79,840

Total Funds and Staff

	FY 1985 Actual	FY 1986[1/] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 39,440	$ 39,380	$ 38,340
Program Support	35,029	30,900	28,100
Administrative Support	10,604	12,010	11,950
Travel	1,448	1,470	1,450
Total Obligations	$ 86,521	$ 83,760	$ 79,840
(Staff)	(711)	(716)	(683)

Program Support Funds and Staff

The Nuclear Reactor Regulation staff and program support funds request is allocated to the major programs shown below. The program support funds are primarily for contractual work by Department of Energy laboratories and commercial contractors. The following narrative describes these programs and the reasons they are needed.

	FY 1985 Actual		FY 1986[1/] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Operating Reactors	$ 10,550	280	$ 14,149	361	$ 17,050	395
Systematic Safety Evaluation of Operating Reactors	926	5	400	8	0	0
Operator Licensing	2,539	59	3,415	68	2,110	78
Casework	10,584	189	4,850	119	3,650	61
Safety Technology	10,178	124	7,936	112	5,290	101
TMI-2 Cleanup	252	14	150	7	0	7
Management, Direction and Support	0	40	0	41	0	41
TOTALS	$ 35,029	711	$ 30,900	716	$ 28,100	683

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

The Office of Nuclear Reactor Regulation (NRR) is responsible for performing licensing activities associated with the construction and operation of nuclear reactors; reviewing applications and issuing licenses for reactor facilities as required by the Atomic Energy Act of 1954; and evaluating the health, safety, and environmental aspects of facilities and sites.

This responsibility involves the following major functions: (1) performing detailed safety, environmental, and antitrust reviews of applications for nuclear power plant construction or operating licenses; (2) conducting safety evaluations of licensees' implementation of requirements or changes to correct inadequacies or effect improvements in the design, operation, and economics of licensed reactors; (3) examining and licensing reactor operators; (4) evaluating issues related to the safety and regulation of reactors to determine if regulatory requirements should be deleted, added, or modified to provide necessary safety improvements or to increase the predictability and stability of the regulatory process; (5) providing for regulatory oversight of the TMI-2 cleanup operations.

OPERATING REACTORS PROGRAM

	FY 1985 Estimate	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 10,550	$ 14,149	$ 17,050
(Staff)	(280)	(361)	(395)

The Operating Reactors Program ensures that operating facilities maintain adequate levels of protection of public health and safety by providing the regulatory actions necessary to correct inadequacies in plant design and operation that are identified from; operating experience, reviewing unanticipated events, resolving generic safety issues, inspection findings, and NRC sponsored research. These regulatory actions include specific technical amendments to operating licenses, requests for information on pending technical issues, and NRC Orders.

The following technical activities are budgeted under this program.

(1) Engineering/systems reviews and issuance of safety evaluations, including amendments to facility licenses necessitated by safety improvements or operating exigencies; responses to requests for technical/operating information; and reviews affecting a class of plants that might result from resolved safety issues. Such reviews numbered 2,700 in FY 1985, and are projected to total 3,600 in FY 1986, and 3,700 in FY 1987. Examples of these reviews include such safety concerns as: Instrumentation to Follow the Course of an Accident, Hydraulic Shock Snubbers, Venting and Purging of Containments, Pipe Breaks in BWR SCRAM Systems, Anticipated Transients Without Reactor Shutdown, Steam Generator Failure, and Diesel Reliability.

(2) Conducting initial technical assessments of reactor events, in order to determine the safety implications of an event, on other operating reactors, and determining what, if any, immediate regulatory actions must be taken.

(3) Developing, in conjunction with the licensees, priority-based schedules for the completion of changes specified by new or revised NRC requirements, and changes proposed by licensees.

(4) Performing project management activities to ensure that safety reviews, including requests from the public, are efficiently and effectively managed, for 95 operating reactors in FY 1985, 105 in FY 1986, and 113 in FY 1987.

Additional funds and staff are required, over previous fiscal years, to achieve the timely review and completion of technical reviews, and provide the project management functions for the increasing number of operating reactors.

SYSTEMATIC SAFETY EVALUATION OF OPERATING REACTORS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 926	$ 400	$ 0
(Staff)	(5)	(8)	(0)

The Integrated Safety Assessment Program (ISAP) will be discontinued as a separate program in FY 1987. The two plant pilot program, that was initiated in FY 1985 will be completed in FY 1986. Beginning in FY 1987, the concept of integrated safety assessments will be incorporated into the day-to-day operations within the Operating Reactors Program.

OPERATOR LICENSING PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 2,539	$ 3,415	$ 2,110
(Staff)	(59)	(68)	(78)

The Operator Licensing program consists of the preparation, administration, and grading of examinations of reactor operators, issuance of operator licenses, the requalification of operators, and certification of licensee training facility instructors.

Initial examinations are needed to ensure that power plants are staffed with qualified operators prior to issuance of the plant operating license. Replacement examinations are administered to operators who change to different facilities to ensure that they are qualified to operate at the different facility and that qualified operators are available at operating plants. The requalification program is an audit type effort to verify the continued proficiency of licensed operators. Operators of non-power reactors are also examined to ensure that they are qualified.

The anticipated workload for operator licensing is shown below:

Examinations

Exam Type	FY 1986	FY 1987
Initial	550	300
Replacement	1,392	1,440
Requalification	390	430
Instructor Certification	115	126
Nonpower reactor	50	50

This program also includes studies of general operator licensing problems, maintenance of an examination question bank, and improvements in the proficiency of examiners through training in examination content and balance, and in the development and writing of questions. These efforts are necessary to maintain and improve the efficiency and effectiveness of the Operator Licensing program. For example, the Examination Question Bank provides computerized questions for inclusion into examinations, thus reducing the time and effort for development of examinations.

The requested resources reflect a policy of conducting an increased proportion of examinations by in-house NRC staff.

CASEWORK PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 10,584	$ 4,850	$ 3,650
(Staff)	(189)	(119)	(61)

The Casework Program (licensing new reactors) consists of the review of applications for reactor construction permits, operating licenses, and standard plant designs. The reviews include all aspects of safety and environmental effects, as well as antitrust implications. Also evaluated as part of these reviews are technical reports submitted by industry organizations, primarily vendors, on subjects related to classes of nuclear reactors and their associated systems or operation.

The required reviews will be conducted on a schedule that will not unnecessarily impact reactor startup and operation. It is anticipated that in FY 1986 there will be applications for 30[1/] plants under active review, and 20[1/] plants in FY 1987. Decisions were rendered on operating licenses for 10 power reactors in FY 1985, with 10 expected in FY 1986, and eight in FY 1987.

Resources are also required to conduct reviews for new and renewal license applications for nonpower reactors and Navy and Department of Energy projects.

The resources for this program decline as the number of existing licensing applications under review declines.

1/ Excludes Midland 1 and Midland 2 plants, which are presently not under active licensing review.

SAFETY TECHNOLOGY PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 10,178	$ 7,936	$ 5,290
(Staff)	(124)	(112)	(101)

The Safety Technology Program addresses significant technical issues that relate to the safety of reactor design, construction, and operation and maintenance, and regulatory issues that relate to the licensing process. In FY 1987, this program includes the technical resolution of unresolved safety issues, existing high and medium priority and new high priority generic issues, the development of a technical basis for regulatory positions on issues identified in the Human Factors Program Plan, and the development or modification of regulations in areas such as severe accidents.

UNRESOLVED SAFETY ISSUES

An Unresolved Safety Issue is a matter that affects a number of nuclear power plants and poses important questions concerning the adequacy of existing safety requirements for which a final resolution has not yet been developed. The issues involve conditions not likely to be acceptable over the lifetime of the plants they affect. Completion is expected on six existing Unresolved Safety Issues (USIs) in FY 1986 and three in FY 1987.

GENERIC ISSUES

Priorities will be established for resolution of potential generic safety issues based on their safety contribution and cost. Technical positions will be developed on existing high and medium priority and new high priority generic safety issues that relate to the safety of nuclear power plant design, construction, or operation. Technical resolutions of 17 high and/or medium generic safety issues were completed in FY 1985, and 16 are planned for completion in FY 1986 and 11 in FY 1987.

HUMAN FACTORS ISSUES

The technical basis will be developed for regulatory positions, guidance, and regulations on human factors issues related to the design, operation, and maintenance of nuclear power reactors. These issues include training, staffing and qualifications, licensing examinations, and maintenance, as identified in the Human Factors Program Plan (NUREG-0985). Ongoing cooperative efforts with industry groups, such as the Institute for Nuclear Power Operations (INPO) and the Nuclear Utilities Management and Human Resource Committee (NUMARC), will be continued.

REGULATORY IMPROVEMENTS

The results of the Severe Accident Research Program and source term research will be incorporated into NRC regulatory practices for operating reactors and reactors under license review over a three-year period beginning in FY 1986. Priorities will be established for multi-plant licensing actions, and the Standard Review Plan for reactor license applications will be updated as necessary. Implementation of the safety goal is planned in FY 1986 and continue through FY 1987.

Technical specifications regulations and standards will be reviewed and modified consistent with the findings of the Technical Specifications Group in FY 1986. Appropriate changes will be implemented on a plant specific basis beginning in FY 1987.

Analytical tools, such as computer codes, for the performance of audit calculations will be evaluated, modified, verified and maintained.

Technical positions and guidance will be developed for conducting probabilistic risk assessments (PRA) including maintaining the capability for assessing risk from external events.

ADVANCED REACTOR CONCEPTS

Resources are provided for interaction and coordination with industry and DOE on developing potential advanced reactor concepts.

SUMMARY

In FY 1987, resources for the Safety Technology Program decrease to reflect discontinuance of work on newly identified medium priority generic safety issues, the reduction of the Advanced Reactor Concepts efforts, discontinuance of the Halden effort (Norwegian advanced reactor project) and decreases to risk assessment methodology improvements and the Human Factors effort.

TMI-2 CLEANUP PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 252	$ 150	$ 0
(Staff)	(14)	(7)	(7)

This activity provides for the on-site inspection and oversight of the TMI-2 cleanup operations, including technical inspections and government relations onsite and in the Middletown, Pennsylvania office. This work will continue to ensure the protection of the public health and safety and the environment during decontamination and disposal of radioactive waste from TMI-2.

MANAGEMENT DIRECTION AND SUPPORT PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(40)	(41)	(41)

The resources requested for Management Direction and Support provide for the overall policy guidance and management direction of the Nuclear Reactor Regulation programs by the Office Director and the Regional Administrators. Requested resources also provide for independent assessments of selected technical programs, proposals and other management issues, which include scheduling and direction of consideration of technical issues, the annual budget submission, proposed mid-year financial reprogramming, executive program analysis reports, staffing plans, congressional budget testimony, responses to congressional inquiries and required support services in the areas of procurement, administration, and personnel.

This page intentionally left blank

NUCLEAR MATERIAL SAFETY AND SAFEGUARDS PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations..$39,520

Total Funds and Staff

	FY 1985 Actual	FY 1986[1/] Estimate	FY 1987 Estimate
Salaries and Benefits	$17,131	$17,700	$17,370
Program Support	16,738	16,305	15,200
Administrative Support	5,429	6,220	6,220
Travel	728	745	730
Total Obligations	$40,026	$40,970	$39,520
(Staff)	(362)	(370)	(360)

Program Support Funds and Staff

The Nuclear Material Safety and Safeguards staff and program support funds are allocated to the major programs shown below. The program support funds are primarily for contractual work by the Department of Energy laboratories and commercial contractors. The narrative that follows describes these programs and the reasons they are needed.

	FY 1985 Actual		FY 1986[1/] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Fuel Cycle Facility and Nuclear Material Safety	$ 3,662	107	$ 3,612	102	$ 2,600	98
Safeguards	3,629	78	3,489	79	2,425	78
High-Level Waste Management	7,111	84	6,545	110	7,575	105
Low-Level Waste Management and Uranium Recovery	2,336	64	2,559	51	2,500	51
Management Direction and Support	0	29	100	28	100	28
TOTALS	$16,738	362	$16,305	370	$15,200	360

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

The Office of Nuclear Material Safety and Safeguards is responible for the health and safety licensing and environmental protection reviews for all activities regulated by the agency, except reactors, and for safeguards technical review of all licensing applications including reactors and the export of special nuclear material. These responsibilities include development and implementation of agency policy for the regulation of activities involving the use and handling of nuclear and other radioactive materials such as uranium milling; fuel fabrication and fuel development; medical, industrial, academic and commercial uses of radioactive isotopes; certification of containers for transport of large quantities of radioactive material; out-of-reactor spent fuel storage; and safe disposal of low-level and high-level radioactive waste. Safeguards responsibilities include those licensing and review activities appropriate to deter and protect against threats of radiological sabotage and threats of theft or diversion of special nuclear material both at fixed facilities and during transport. These responsibilities are administered under four programs: (1) Fuel Cycle Facility and Nuclear Material Safety, (2) Safeguards, (3) High-Level Waste Management, and (4) Low-Level Waste Management and Uranium Recovery.

The safety and environmental regulatory programs are designed to assure that workers, the public health and safety, and the environment are protected during both normal and off-normal operations. These programs regulate activities ranging from complex operations--such as disposal of high-level radioactive waste in deep geologic repositories, reactor fuel development and fabrication, and medical radiopharmaceutical production--to relatively simple operations--such as medical diagnostic use of small quantities of radioisotopes. Implementation of these programs provides appropriate assurances for adequate and safe facilities; trained and competent personnel; appropriate practices to control personnel exposures and environmental releases; contingency planning; transport casks to withstand conditions of normal transport and of accidents; and appropriate handling of radioactive wastes.

The safeguards regulatory program is designed to deter, detect, and protect against threats both within and outside of facilities, and during transport. In addition to providing for appropriate theft protection, the safeguards program includes appropriate planning to protect against and to respond to intentional plant damage by radiological sabotage sufficient to cause significant off-site releases. All safeguards activities are designed to assure that safeguards protective measures do not interfere with the safe operation of a facility both during normal and off-normal situations.

The Nuclear Material Safety and Safeguards Programs have been strongly affected by the Uranium Mill Tailings Radiation Control Act of 1978, the Low-Level Radioactive Waste Policy Act of 1980, as amended in 1985, and the Nuclear Waste Policy Act of 1982. The Uranium Mill Tailings Act directed the agency to develop regulations and to license the disposal of mill tailings from licensed uranium mills. Congressional action has directed that the agency regulations be amended in recognition of the Environmental Protection Agency standards both for radiation and groundwater protection. In addition to revised regulations for licensees and approval of licensee mill tailings disposal plans, the Uranium Mill Tailings Act directed the agency to review and approve the site-by-site implementation of the Department of Energy program for mill tailings remedial actions, and to eventually license possession of these sites by the Department of Energy.

The Low-Level Radioactive Waste Policy Act of 1980 placed the responsibility on the states to provide for disposal capacity for low-level waste generated within a state. The agency must ensure that appropriate regulations exist for both agency and state licensing of disposal sites and must be prepared to provide technical assistance to states in reaching decisions on disposal facilities. On January 15, 1986, the President signed into law the Low-Level Radioactive Waste Policy Amendments Act of 1985, which significantly increases NRC responsibilities in a number of areas. Resources have not been included in this budget request for implementing this new legislation. The NRC is currently assessing the extent to which additional resources are required to implement the Act.

The Nuclear Waste Policy Act lays out a detailed approach for high-level waste disposal--an extensive, long-range undertaking with the Department of Energy having operational responsibility and the Commission having regulatory responsibility. This undertaking involves a complex, integrated system of waste handling, transportation, interim and retrievable storage, and ultimate deep geologic disposal of high-level radioactive waste requiring a high certainty of acceptable environmental and health impacts over thousands of years.

FUEL CYCLE FACILITY AND NUCLEAR MATERIAL SAFETY PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3,662	$ 3,612	$ 2,600
(Staff)	(107)	(102)	(98)

The Fuel Cycle Facility and Nuclear Material Safety Program includes all licensed activities for the "front-end" of the fuel cycle after the uranium ore has been mined and milled. This includes the processing of ore concentrates (yellow cake) into a suitable form for fuel, the development and fabrication of the fuel, and the safe transport and storage of fresh fuel at reactor sites until the reactor core is initially loaded with fuel. This program also includes regulating approximately nine thousand medical, academic, industrial, and commercial users of nuclear and other radioactive material for diagnostic and therapeutic treatments; medical and biological research; academic training and research; industrial gauging and nondestructive testing; production of radiopharmaceuticals; and fabrication of commercial products such as smoke detectors.

The Fuel Cycle Facility and Nuclear Material Safety program also involves, for operations under NMSS purview, the safe handling of radioactive wastes by industrial licensees and the safe interim storage of both low-level and high-level wastes at facilities prior to disposal at commercial facilities or by the Department of Energy. This includes storage of spent fuel outside of reactor facilities or at any monitored retrievable storage facility that the Department of Energy may develop. Also included are the safety overview of the Department of Energy waste demonstration activities at the closed-down West Valley, New York reprocessing facility, the safety assessment of containers used to transport large quantities of radioactive material such as spent fuel and high-level waste, and the packaging and transport activities associated with the radioactive wastes from the Three Mile Island Unit 2 reactor, particularly the core debris. Transportation activities are closely coordinated with the Department of Transportation and, as appropriate, with the Department of Energy and the Federal Emergency Management Agency.

The Resource Decrease in FY 1987 represents reduced efforts in licensing casework, remedial actions at contaminated sites, response to unanticipated events, computer codes for transport cask design review, and pre-licensing guidance to DOE for the monitored retrievable storage program.

FUEL CYCLE FACILITY AND NUCLEAR MATERIALS LICENSING

Licensing casework includes safety and environmental reviews required for the licensing and regulation of byproduct, source and special nuclear material in applications other than operation of power, test, or research reactors. NMSS regulated activities specifically include but are not limited to uranium fuel fabrication facilities, advanced fuel R&D facilities, and uranium hexafluoride production facilities, as well as medical, academic, industrial, and commercial uses of radioactive material. Approximately 6,000 cases (new licenses, license amendments, renewals, and sealed source reviews) will be completed each year in FY 1986 and in FY 1987.

GENERAL LICENSES

General licenses granted under Nuclear Regulatory Commission regulations are effective without the filing of an application with the agency or the issuance of licensing documents to particular persons. Such general licenses currently apply to such radioactive devices as gauges, light sources, gas chromatographs, x-ray fluorescense units, and static eliminators. During FY 1985, a study found that gauge users were not complying in all cases with transfer and disposal requirements. During FY 1986 and 1987, the agency will expand the FY 1985 study to address other general licenses and to assess accountability and protection of health and safety under the general license regulations, determine whether modifications of the regulations are needed, and make determinations about limiting or expanding the general license concept.

LICENSING OF MONITORED RETRIEVABLE STORAGE FACILITY

Monitored retrievable storage (MRS) involves the receipt, handling, packaging and storage of spent fuel and high-level waste in a facility that permits continuous monitoring and ready retrieval for subsequent shipment to a permanent repository. In compliance with the Nuclear Waste Policy Act of 1982, the Department of Energy's MRS facility construction proposal to Congress will be reviewed by the Nuclear Regulatory Commission and comments will be provided to the Department in FY 1986. Under the Act, the Commission is responsible for licensing an MRS if Congress authorizes DOE to construct one. Regulations for the storage of spent fuel in an independent spent fuel storage installation (Part 72 of Title 10 of the Code of Federal Regulations) will be amended in FY 1986 to provide for licensing an MRS facility assuming Congressional authorization. In FY 1987 the Commission will review topical reports on specific design features, as requested by DOE, and will continue to provide other pre-licensing guidance to DOE.

SHIPMENTS OF SPENT FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

The Nuclear Regulatory Commission reviews and certifies the designs of containers for transporting large quantities of radioactive material to ensure that such containers can withstand conditions of normal transport and accidents. Such licensing cases involve applications for new container designs and for modifications to existing designs. Applications are submitted by commercial vendors and, on a selected basis, by the Department of Energy. Approximately 110 licensing cases will be completed in FY 1986 and approximately 95 such cases will be completed in FY 1987. As required during fuel removal of the TMI-2 core, nuclear criticality safety analyses will be performed for the defueling operations and canister storage considerations. Also, in support of the Nuclear Waste Policy Act, the agency will provide technical guidance to the Department of Energy, the Department of Transportation, the States, and industry on safety and environmental policies and regulations for the shipment of spent fuel and high-level radioactive waste to any monitored retrievable storage facility, the high-level waste repository, and any Federal interim storage facility.

DRY STORAGE OF SPENT FUEL

Review and evaluation work will continue on applications for site-specific interim storage of spent fuel outside of reactor pools. Also, review work will continue on evaluation of "Topical Reports" for dry storage cask designs. As required by the Nuclear Waste Policy Act, development work will continue on safety criteria and standards leading to rulemaking for generic approvals for the use of dry spent fuel storage casks. This will require continued close coordination with the Department of Energy on its development and demonstrations of dry cask and site storage systems, and validation of performance predictions.

DEMONSTRATION OF HIGH-LEVEL WASTE SOLIDIFICATION

As required by the West Valley Demonstration Project Act, consultation with the Department of Energy will continue regarding the planning and safety analyses for the West Valley, New York project for the solidification of high-level radioactive waste. NRC safety evaluation reports in FY 1987 will include review of supernate removal and treatment, and the sludge mobilization system. Close consultation also is important to ensure that the resulting solidified high-level waste will be acceptable for disposal in the high-level waste repository. Coordination with the Department of Energy on rod consolidation and shipments of spent fuel from the West Valley pool will be concluded in FY 1986.

TECHNICAL ASSISTANCE TO STATES

The 28 NRC Agreement States with approved responsibility to regulate certain nuclear materials activities will continue to receive technical assistance needed for the assessment of license applications for which they have licensing responsibility. For example, in FY 1985, safety evaluations were performed by the agency for cesium sealed sources to be used in commercial product irradiators.

MANAGEMENT OF LOW LEVEL WASTE PRIOR TO ULTIMATE DISPOSAL

Under the terms of the Low-Level Radioactive Waste Policy Act, as amended on January 15, 1986, the States have responsibility for providing disposal capacity for certain low-level wastes (LLW) after January 1, 1993. In the interim, access to existing LLW disposal sites is limited. Thus, work will continue on potential rule changes and preparation of licensing guides for acceptable LLW storage and treatment options. Options include combinations of additional on-site storage, volume reduction, and centralized storage, many of which will require amendments to existing licenses.

SAFEGUARDS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3,629	$ 3,489	$ 2,425
(Staff)	(78)	(79)	(78)

The Safeguards Program is designed to deter, detect and protect against threats, radiological sabotage and theft, or diversion involving special nuclear material, both at licensed fixed facilities and during transport. Program implementation involves a large degree of professional judgment and is influenced by security or terrorist-type activities within society. Failure of safeguards has the potential for unusually high impacts on society, including theft of special nuclear material for extortion purposes or in quantities sufficient to make an explosive device, and intentional damage sufficient to cause significant off-site releases from licensed facilities. Special care must be exercised to assure that licensee implemented safeguards programs do not affect the operation of a facility (in both normal and off-normal situations) to the extent that a significant safety problem results. The resources requested in this budget are based on the assumption that there will be no change to the basic assumptions for the NRC safeguards program.

Safeguards requirements are applied to nuclear material licensees possessing enriched uranium or plutonium, to reactors, and to the transport of enriched uranium or plutonium and nuclear reactor spent fuel. The requirements involve detailed planning, procedures, and operational systems for maintaining accountability of material, as well as for deterring and responding to suspected theft or diversion of nuclear material, acts of radiological sabotage, or illegal seizure of material or facilities. Techniques used by licensees include sophisticated detection and alarm systems, barriers, material control and accounting, contingency plans for timely responses to threatening situations, and safeguards organizations staffed with trained and competent expert personnel. This program also includes agency implementation of the Safeguards Agreement between the United States and the International Atomic Energy Agency (IAEA).

The resource decrease in FY 1987 represents reduced efforts in regulations and regulatory guidance governing protection of high-level waste, spent fuel, and non-power reactors material control and accounting at fuel cycle facilities, and support to the International Atomic Energy Agency.

REVIEWS OF SAFEGUARDS AT OPERATING REACTORS

Safeguards regulatory effectiveness reviews at operating power reactors have the objective of assuring that the safeguards required by the regulations and implemented by the licensees provide adequate protection without compromising safe operations at the licensees' facilities. By the end of FY 1987, approximately 60 reviews will have been completed at the currently budgeted level of 18 reviews per year.

SAFEGUARDS OF LICENSED FACILITIES AND TRANSPORTATION

Licensee operational data will continue to be compiled and analyzed to look for early warning patterns and trends in safeguards events and data and to identify and resolve any related generic issues through rule and regulatory guidance revisions. Approximately 700 licensing cases should be completed in FY 1986, and a commensurate number in FY 1987. These licensing cases include technical reviews of safeguards plans or revisions of those plans for power reactors, nonpower reactors, fuel cycle facilities, the transport of nuclear materials, and the export of nuclear materials.

SAFEGUARDS SUPPORT OF THE NUCLEAR WASTE POLICY ACT

In support of the Nuclear Waste Policy Act of 1982, the safeguards aspects of any monitored retrievable storage facility as proposed by the Department of Energy will be reviewed and prelicensing guidance will be provided consistent with Department of Energy schedules. As required by the Nuclear Waste Policy Act, development work will continue on safeguards requirements for generic licensing of dry cask spent fuel storage.

IAEA SAFEGUARDS PROGRAM PARTICIPATION

Consistent with the objectives of Title II of the Nuclear Nonproliferation Act, participation will continue in the Interagency Action Plan Working Group to strengthen IAEA safeguards and support the U.S. program to provide technical assistance to IAEA.

In support of the US/IAEA Safeguards Agreement, which places selected U.S. nuclear facilities under IAEA safeguards, documentation of facility descriptions and the formal specific arrangements for implementing IAEA safeguards at the facilities will be completed, nuclear materials transaction and inventory data will be compiled and reported to IAEA, and IAEA inspection activities at selected U.S. facilities will be assisted.

HIGH-LEVEL WASTE MANAGEMENT PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 7,111	$ 6,545	$ 7,575
(Staff)	(84)	(110)	(105)

The NRC's high-level waste management program is directed to an effective and efficient discharge of NRC's responsibilities based on the premise that, in the absence of unresolved safety concerns, the NRC regulatory program will not delay implementation of the Executive Branch's program as reflected in the DOE Project Decision Schedule (NWPA Section 114(e)). The resources identified are based on the schedules presented in the Draft Project Decision Schedule. Some revision may be required once the effective Project Decision Schedule is completed by DOE, which is now expected in early 1986.

The Nuclear Regulatory Commission's principal responsibility in the high-level waste program is to license the high-level waste repository providing that an independent NRC determination shows that the proposed repository's expected performance meets regulatory requirements and is adequate to protect the public health and safety and the environment. To fulfill this responsibility without causing costly delay or rework in the Department of Energy program, early, ongoing interaction and prelicensing consultation is necessary between the Nuclear Regulatory Commission and the Department of Energy. Licensing decisions will be based on independent analyses of programs now being planned and implemented by the Department of Energy. The Department of Energy must demonstrate and the NRC must assure with appropriate certainty in a formal licensing proceeding that the appropriate regulatory standards for public health and safety and the environment are adequately met. In order to provide for an effective and efficient licensing process for this first-of-a-kind undertaking, the Nuclear Regulatory Commission, in a timely manner, must develop the methods for demonstrating compliance with performance objectives to permit independent determination of the adequacy of the Department of Energy program; provide guidance to assure that the Department of Energy program provides essential and acceptable data without costly delay or rework; provide onsite overview of activities; identify and resolve issues; and provide appropriate and timely review and evaluation of Department of Energy submittals.

PRELICENSING CONSULTATION

Close interaction will be maintained with the Department of Energy, the States, affected Indian Tribes, the technical community and other interested members of the public to identify and begin the resolution of licensing issues at the earliest possible date to minimize costly delays or reworks by the Department of Energy. A licensing open-item tracking system will be developed and implemented in FY 1986 - FY 1987 to help ensure that critical licensing issues are properly addressed and tracked to resolution.

As part of this effort, extensive Nuclear Regulatory Commission pre-licensing reviews of the Department of Energy's site investigations will continue. These investigations include construction of shafts, testing of geologic properties, and other technical activities. Modest additional funding has been included to facilitate agency review of the Department's FY 1987 activities associated with the second repository.

REVIEW OF SITE CHARACTERIZATION PLANS

The Department of Energy's site characterization plans (SCPs) for three potential sites for the first repository will be reviewed in the FY 1986 - FY 1987 period, and the staff will prepare a site characterization analysis (SCA) for each site. As noted above, prior to receiving the SCPs, agency staff is conducting extensive consultation with the Department of Energy to facilitate the early resolution of issues which might otherwise disrupt the Department's activities. As required by the Nuclear Waste Policy Act, updates of the plans will continue until a site is selected (1991). Staffing decreases in FY 1987 are due to the anticipated completion of SCP reviews that year.

REGULATORY GUIDANCE

To ensure that the Department of Energy program provides the essential, acceptable, and timely data required by the Nuclear Regulatory Commission for licensing review and to ensure that licensing information needs are met and that licensing issues are resolved in a timely manner, the agency must provide appropriate and timely regulatory guidance to the Department. Such guidance includes the agency's regulations, regulatory guides, staff techical positions, and documented technical meetings. Underlying such guidance is a complex set of system performance assessment models and computer codes which must be maintained and updated as the repository development program progresses. Additional funding has been included in FY 1987 to facilitate the preparation of necessary guidance and the resolution of licensing issues in a timely manner.

LOW-LEVEL WASTE MANAGEMENT AND URANIUM RECOVERY PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate *
Funds	$ 2,336	$ 2,559	$ 2,500
(Staff)	(64)	(51)	(51)

The Low-Level Waste Management Program includes development of regulatory guidance for implementing 10 CFR Part 61 regulatory requirements at existing and new near-surface land disposal sites, and for alternatives to conventional shallow land disposal practices; providing assistance to States in their development of new waste disposal facilities; reviewing and processing licensing actions as necessary to ensure continued safe operation of currently operating commercial disposal facilities; and other efforts to assist States and compacts in their implementation of the Low-Level Radioactive Waste Policy Act, as amended.

The Uranium Recovery Program involves the licensing of those facilities under agency jurisdiction that are engaged in uranium extraction activities (other than conventional mining) and ore milling activities; the modification and development of rules that are consistent with the Environmental Protection Agency rules for regulating mill tailings; and approval, on a site-by-site basis, of each licensee's plan for disposal of mill tailings to meet requirements for public and environmental protection. In addition, the Nuclear Regulatory Commission must review, for concurrence and licensing, the actions taken by the Department of Energy in their Uranium Mill Tailings Remedial Action Program.

DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE

On January 15, 1986, the President signed into law the Low-Level Radioactive Waste Policy Amendments Act of 1985. Under this law, the NRC is given additional responsibilities in the following areas: defining low-level wastes; licensing the federal disposal of commercial LLW greater than Class C; granting emergency access to regional disposal facilities; providing regulatory

*NOTE: Resources have not been included in this budget request for implementing the Low-Level Radioactive Waste Policy Amendments Act of 1985. The NRC is currently assessing the extent to which additional resources are required to implement the Act.

guidance on alternative disposal methods; reducing the license review time; and establishing regulatory standards for wastes below regulatory concern.

Regulatory guidance is being developed for existing Part 61 requirements; alternatives to conventional shallow land disposal practices; and wastes containing radionuclides in concentrations above levels generally acceptable for near surface disposal. Work is underway to study non-radioactive but hazardous constituents of low-level radioactive wastes, and applicability of regulations promulgated by the Environmental Protection Agency (EPA) pursuant to the Resource Conservation and Recovery Act to the management of low-level radioactive wastes.

An amendment to Part 61 (Licensing Requirements for Land Disposal of Radioactive Waste) is being developed to establish financial arrangements for long-term care of disposal sites. Also, criteria are being developed for evaluating requests for transfer of sites to the jurisdiction of the Federal Government, as provided for under the Nuclear Waste Policy Act. A proposed rule is to be published in FY 1986 and development of a final rule will continue in FY 1987 for the long-term care of disposal sites.

To ensure prompt and efficient implementation of 10 CFR 61 regulatory requirements applicable to low-level wastes currently being shipped to commercial low-level waste disposal sites, reviews of topical reports on waste solidification processes, waste classification systems, and improved disposal containers will continue.

LICENSING URANIUM RECOVERY FACILITIES

Approximately 70 licensing cases per year in both FY 1986 and FY 1987 will be completed for uranium recovery facilities. These licensing cases include safety and environmental reviews of applications for new licenses, as well as applications for amendments to or renewal of existing licenses for uranium mills, heap leaching facilities, ore-buying stations, commercial solution mining, and uranium extraction research and development projects.

To ensure protection of the public health and safety it is necessary to review approximately 90 licensee monitoring and agency inspection reports per year and to assess the need for improvements in regulatory guidance and licensee performance.

Congress has mandated that the agency revise Part 40 of the regulations (Domestic Licensing of Source Material) to conform to final Environmental Protection Agency standards (40 CFR 192).

This rulemaking will focus on groundwater protection from radiological and chemical hazards at mill tailing sites. It is anticipated that a proposed rule will be published in FY 1986 and a final rule in FY 1987.

URANIUM MILL TAILINGS REMEDIAL ACTION PROGRAM

As required by the Uranium Mill Tailings Radiation Control Act, reviews will be conducted of the remedial actions that will be taken by the Department of Energy at 24 mill tailings sites and several thousand contaminated properties located near the sites. Before the remedial actions can begin, the Nuclear Regulatory Commission must review and concur with the Department of Energy plans for the long-term stabilization of mill tailings for inactive mills which generated mill tailings due to Atomic Energy Commission and/or Department of Energy activities. The program of remedial action for these mill tailings sites involves approval of plans to assure adequate long-term control of radiation or radioactive releases from the sites, protection of groundwater, and eventual licensing of the long-term custody and maintenance of the sites. The Act's provision for early Nuclear Regulatory Commission review and approval of Department of Energy plans helps ensure that the custody and care of the site can be licensed by the Nuclear Regulatory Commission, thereby precluding costly delay or rework by the Department of Energy. The greatest Nuclear Regulatory Commission involvement is expected to occur during the 1985-1988 period.

TECHNICAL ASSISTANCE TO STATES

Technical assistance on low-level waste disposal and licensing of uranium recovery facilities will continue in FY 1986 and FY 1987. With respect to low-level waste, every effort will be made to provide technical assistance to the States for existing low-level waste sites and regulatory guidance on alternative disposal technologies, as requested. With regard to uranium recovery, technical assistance will be provided to Agreement States upon request on specific technical licensing matters. Two or three requests for such assistance are anticipated each year.

MANAGEMENT DIRECTION AND SUPPORT PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 100	$ 100
(Staff)	(29)	(28)	(28)

The resources requested for Management Direction and Support provide for the overall policy guidance and management direction of the Nuclear Materials Safety and Safeguards programs by the Office Director and the Regional Administrators. Requested resources also provide for technical and administrative support to the Director and the Regional Administrators.

INSPECTION AND ENFORCEMENT PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations................................$98,540

Total Funds and Staff

	FY 1985 Actual	FY 1986[1/] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 53,440	$ 54,570	$ 55,750
Program Support	21,918	21,220	20,070
Travel	4,927	5,070	5,250
Administrative Support	14,301	17,380	17,470
Total Obligations	$ 94,586	$ 98,240	$ 98,540
(Staff)	(1,105)	(1,140)	(1,135)

Program Support Funds and Staff

The Inspection and Enforcement staff and program support funds are allocated to the major programs shown below. The program support funds are primarily for contractual work by the Department of Energy laboratories and commercial contractors. The narrative that follows describes the programs and the reason they are needed.

	FY 1985 Actual		FY 1986[1/] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Reactor Construction	$ 809	63	$ 830	38	$ 300	32
Reactor Operations	6,289	555	6,290	630	6,185	637
Vendor and Quality Assurance	5,902	76	3,120	73	2,645	65
Enforcement, Technical Support and Incident Response	7,528	159	8,081	153	7,670	152
Fuel Cycle and Materials	661	95	920	87	970	87
Specialized Technical Training	729	16	1,979	20	2,300	23
Management Direction and Support	0	141	0	139	0	139
TOTAL	$21,918	1,105	$21,220	1,140	$20,070	1,135

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

Inspection and Enforcement Programs are conducted to ensure that facilities and materials under agency jurisdiction are designed, constructed, and operated or used safely and in compliance with agency regulations. Prompt enforcement action is taken against licensees who do not comply.

Inspection and Enforcement Programs are conducted by the Office of Inspection and Enforcement and the agency's five Regional Offices, which are located in King of Prussia, Pennsylvania (Region I); Atlanta, Georgia (Region II); Glen Ellyn, Illinois (Region III); Arlington, Texas (Region IV); and Walnut Creek, California (Region V).

The headquarters staff has responsibility for: (1) inspection policy and program development; (2) assessment of inspection program content and implementation by Regional Offices; (3) appraisal inspections to determine licensee and regional performance; (4) enforcement actions referred by Regional Offices; (5) evaluation of licensee events; (6) response to incidents by managing the agency's Operations Center; (7) emergency preparedness, including coordination with the Federal Emergency Management Agency and emergency preparedness licensing of reactors; (8) development and licensing of quality assurance programs; (9) development and implementation of the vendor inspection program; (10) design inspection programs; (11) specialized technical training; and (12) technical support to the Regional Offices.

The majority of the program staff are located in the Regional Offices. The Regional inspection staff has responsibility for: (1) conducting inspections at reactors, fuel facilities, and materials licensees; (2) initiating enforcement actions; (3) conducting systematic assessments of licensee performance; (4) performing emergency preparedness annual reviews; (5) responding to incidents by dispatching personnel to the site in question; and (6) providing technical support to the Office of Investigations.

Implementation of the inspection program is conducted under two basic formats: (1) prescribed scheduled routine inspections designed to evaluate the licensee's activities, recognizing that the licensee has primary responsibility for protection of the public health and safety; and (2) unscheduled, reactive inspections to follow up on problems or to assess licensee compliance with special requirements imposed as a result of the evaluation of events at other reactor plants.

Response to incidents is carried out jointly by headquarters and the regions. At headquarters, the agency's Operations Center is continuously staffed to receive calls of reportable events; to determine the appropriate immediate action; and to pass appropriate items to the regions for followup. When necessary, the Center is activated and an emergency response team from the region is dispatched to the site to monitor and evaluate the situation and provide advice and information to the licensee, the Federal Emergency Management Agency, state and local government officials, other Federal agencies, and the public.

The Inspection and Enforcement Programs address the need for increased assurance that reactors being constructed will meet operating license requirements and that those in operation will operate safely.

The resident inspector program (agency inspectors with duty stations at power reactor sites) is being expanded to provide two residents at almost all single unit operating sites, in addition to the two residents assigned to every reactor construction site, including those sites with plants undergoing preoperational testing.

Inspection and Enforcement Programs - Continued

Table 1

Power Reactor Caseload Forecast

	End-of-Year		
	Actual FY 1985	Estimate FY 1986	Estimate FY 1987
Reactors Under Construction[a]	12	11	10
Reactors in Preoperational Testing[b]	20	11	4
Subtotal Construction	32	22	14
Reactors Licensed or Ready for Low Power Operation[b]	95	105	113
Total	127	127	127

[a] Related resources are discussed under Reactors in Construction.

[b] Related resources are discussed under Reactors in Operation.

REACTOR CONSTRUCTION PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 809	$ 830	$ 300
(Staff)	(63)	(38)	(32)

The Reactor Construction Program consists of developing, conducting, and assessing inspection programs at reactors under construction. Resource reductions in FY 1987 are a result of decline in caseload (see Table 1) and are partially offset by increases for a restart readiness review. A readiness review is a joint initiative by the utility and NRC to evaluate in detail the utility's readiness to proceed to the next major milestone of the project in conformance with requirements for receiving an operating license. The agency's inspection program for those reactors whose construction is nearly complete (i.e., preoperational testing) is discussed in the Reactor Operations Program. The Reactor Construction Program is carried out by resident inspectors, region-based specialists, and construction appraisal team inspectors. Approximately one percent of the work activities at construction sites, which typically employ 4000 to 6000 workers, is currently actually observed by NRC inspectors.

RESIDENT INSPECTORS

The resident inspector applies general experience in construction activities to assure that installations of equipment and structures are in accordance with design requirements and quality assurance procedures. The resident inspector has frequent contact with construction management personnel from the utility. He reviews procedures, observes the work, and audits quality control. He may also participate in agency hearings, licensing meetings and public discussions. The agency is assigning two resident inspectors at each active construction site. A second construction resident inspector provides a substantial increase in onsite inspection time (approximately 50%) and should lead to more timely identification of problems associated with the complex and multidisciplined construction activities. The FY 1985 House Appropriation Committee Report (H.R. 98-755) which accompanied P.L. 98-360 indicated that more inspection effort needs to be focused on plants under construction.

REGION-BASED SPECIALISTS

The majority of inspections are in-depth, specialized technical inspections carried out by region-based specialists in the areas of civil, mechanical, and electrical engineering, instrumentation, welding, nondestructive examination and quality assurance. Region-based specialists are responsible for evaluating the corrective measures taken by the utilities to resolve certain types of identified problems.

CONSTRUCTION APPRAISAL TEAM

Construction Appraisal Team inspections are scheduled for selected reactors and serve to identify construction problems prior to licensing for operation or, conversely, to provide assurance that the plant is ready for licensing. Major independent team inspections are planned at four sites in FY 1986 and one site in FY 1987 by the Construction Appraisal Team. These inspections help determine through an integrated multidisciplined approach whether a facility is being constructed in accordance with regulatory requirements and appropriate industry practices, and whether the applicant's management and quality control programs are effective. They emphasize verification of the quality of installed components, systems and structures. They are also used to assess regional implementation of the construction inspection program, as well as to determine needed changes. Program support funds augment these efforts by providing technical assistance to the Construction Appraisal Team.

REACTOR OPERATIONS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 6,289	$ 6,290	$ 6,185
(Staff)	(555)	(630)	(637)

The Reactor Operations Program consists of developing, conducting and assessing inspection programs for power and nonpower reactors during the preoperational testing, startup, and operational phases; developing and coordinating third-party inspection programs and agreements; reviewing emergency preparedness license applications and modifications; and providing radiological monitoring support services to Agreement States and other states. The Operating Reactor Inspection Program is performed by resident inspectors, region-based specialists and the Performance Appraisal Team.

RESIDENT INSPECTORS

Resident inspectors are generalists who concentrate on day-to-day operations, event followup, licensee management and staff performance. In addition, they coordinate on-site activities of the various agency offices and participate in emergency exercises. They also serve as the agency contact with local officials, the press and the public. The budget allows for assignment of 148 resident inspectors to operating reactors and those in preoperational testing in FY 1986 and 156 in FY 1987. A second resident inspector is being assigned at plants in the preoperational testing phase to allow for additional coverage during the critical period when utility construction and associated quality assurance and quality control inspections are being completed, preoperational testing is in progress, hearings are being conducted and when last minute allegations may be introduced. This increased on-site inspection coverage, which provides additional support for identifying, evaluating and resolving issues, will help reduce the probability of licensing delays. In FY 1987, a second resident inspector will also be assigned to almost all single unit operating sites. This additional coverage will provide better continuity and increased direct inspection of important areas such as licensee maintenance and surveillance activities.

REGION BASED SPECIALISTS

Region-based inspectors are specialists whose efforts include detailed inspections in such areas as plant operations, systems surveillance, maintenance, modifications, inservice inspection, fire protection, nondestructive testing, training, refueling, radiation protection, quality assurance, emergency planning, environmental protection, management systems, security, and safeguards. Additional region-based specialists are needed in FY 1987 due to an increased number of operating plants and for increased effort at new plants during the first two years of operation. To augment these region-based specialists, highly specialized technical assistance is provided through contractual assistance. These contracts include aerial radiological surveys, state environmental monitoring at reactor sites and other confirmatory independent measurements. Funding is also required to provide technical assistance for team inspections during planned reactor outages. Because of the potential impact to safety margins resulting from repairs and modifications conducted during outages, the NRC must implement an inspection program which focuses on major plant modifications and repairs. Many problems at operating plants have resulted from inadequate control of design, equipment installation or testing activities during outages. The numbers and types of problems have indicated the need for increased NRC inspection of modifications, repair and maintenance activities during plant outages. A pilot program is being conducted by headquarters staff during FY 1986 and the developed program will then be implemented on a national basis.

PERFORMANCE APPRAISAL TEAMS

Three Performance Appraisal Team inspections will be conducted each fiscal year to assess licensee implementation of management control systems and regional implementation of inspection programs, and to determine the effectiveness of the Institute of Nuclear Power Operations' (an industry sponsored organization) program for evaluating plant operations.

EMERGENCY PREPAREDNESS REVIEWS

Nuclear power plant applicants and licensees are required by agency regulations (Part 50 of Title 10 of the Code of Federal Regulations) to develop and implement onsite and offsite plans for taking protective actions in the event of reactor accidents. The plans for a given reactor site generally involve those prepared by the utility for application to onsite areas and those prepared by State and local governmental authorities for areas beyond the plant boundary. Emergency preparedness activities for NRC include: (1) developing licensing policy and guidance; (2) reviewing and evaluating onsite emergency plans and procedures to provide input for Safety Evaluation Reports on applicants' emergency preparedness capabilities; (3) reviewing modifications to existing licenses; and (4) coordinating with the Federal Emergency Management Agency (FEMA) on findings and determinations resulting from their review of offsite emergency preparedness of State and local governments as it affects licensed nuclear facilities. NRC will participate in a Federal Field Exercise in emergency preparedness sponsored by FEMA in FY 1987.

VENDOR AND QUALITY ASSURANCE PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 5,902	$ 3,120	$ 2,645
(Staff)	(76)	(73)	(65)

The Vendor Program focuses on architect-engineering firms, nuclear steam system suppliers and companies producing the piping, valves, pumps, electrical equipment, and instrumentation for reactors and safety-related systems. During inspections conducted at licensed facilities and the offices and plants of vendors, emphasis is placed on design verification, interfaces with plant construction, and the development, verification, and use of computer codes. The primary concern is that licensees are fulfilling their responsibilities in these areas. The Quality Assurance Program integrates agency activities for quality assurance licensing, inspection, standards and research, recognizing that substantive improvements in quality must come from the nuclear industry itself, with NRC efforts oriented to the prevention and early detection of major quality problems.

VENDOR PROGRAM

Approximately 120 inspections of vendors will be conducted each year in FY 1986 and FY 1987. The principal inspection categories are: (1) reactive inspections at vendor facilities and reactor sites in response to reports of defects and noncompliance with the regulations (submitted in accordance with Part 21 of Title 10 of the Code of Federal Regulations), adverse reports on conditions of construction (submitted in accordance with Part 50.55 (e) of Title 10 of the Code of Federal Reguations) and allegations by workers and the public; (2) equipment qualification related inspections; (3) reactive and routine inspections of the quality assurance programs of architect-engineers and nuclear steam system suppliers, technical information provided to reactor licensees on vendor-supplied equipment, and third-party surveys such as those conducted by the American Society of Mechanical Engineers in accordance with the Boiler and Pressure Vessel Code; and (4) inspections to followup on known technical issues.

Contractor assistance funds permit the agency to: conduct more detailed technical inspections at vendor facilities, concentrating on safety impact and feedback of information directly to plant operations; and provide the capability to hire experts in specialized areas. Experience over the past several years with vendors indicates that this effort is warranted. Reactor operational safety issues have resulted from the breakdown of vendor quality assurance programs, failure of vendors to adequately convey maintenance procedures to licensees, and improperly certified (and in some cases fraudulent) work and materials provided to major vendors by second- and third-level vendors. Major problems throughout the industry can be avoided if properly considered and resolved. Failure to consider these issues in a thorough and timely manner can result in additional costs to licensees, delays in licensing and the shutdown of operating plants to replace or repair defective components. Regional vendor inspection efforts are primarily related to followup and closeout actions at licensed facilities to ensure that licensee corrective action is carried out with respect to vendor problems discovered during vendor inspections.

QUALITY ASSURANCE PROGRAM

A revised program for quality assurance is being developed and carried out as recommended in "A Report to Congress on Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants," USNRC Report NUREG-1055. The Report to Congress identified a number of areas in which current agency practices should be altered to increase the likelihood of achieving quality and the assurance of quality in design and construction. While the focus of the report was on construction, many of the corrections will be applied to reactor operations. These changes include: (1) reductions in agency prescriptiveness and greater emphasis on quality program performance and end products; (2) reduction or alteration of requirements which have resulted in attempts to inspect quality into a plant rather than to place reliance on those responsible for a project or plant operations; and (3) methods to resolve quality assurance contentions earlier in the licensing process so as to avoid the necessity for considering a large number of allegations in the final stages of a project when the consequences of delay are much greater. These changes will also make the nuclear licensing and regulatory process more predictable and stable. A pilot program on readiness reviews which embodies the changes described above will continue through FY 1987.

Overall resources in the Vendor and QA area are decreasing primarily as a result of reduced requirements in the design inspection area (described below). This is partially offset by additional effort to accommodate increased emphasis on readiness reviews.

The current Integrated Design Inspections and Independent Design Verification Program reviews of selected reactors under construction will be phased out by the end of FY 1986. These programs were primarily directed at design reviews of reactors in construction. As more reactors come on line, NRC will shift the design inspection program to focus on inspections involving the review of design changes related to routine and/or major modifications to reactors in operation or during outages. Additionally, design inspections will be performed at selected design organizations that provide engineering services to operating reactors. These inspections will concentrate in the mechanical, electrical and instrumentation and control areas and will sample the technical adequacy of the engineering products. Two such design inspections are planned in FY 1987.

ENFORCEMENT, TECHNICAL SUPPORT, AND INCIDENT RESPONSE PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 7,528	$ 8,081	$ 7,670
(Staff)	(159)	(153)	(152)

The Enforcement Program is intended to assure safety through licensee compliance with agency regulations. A program for the systematic assessment of licensee performance is aimed at improving both NRC regulatory efforts and licensee performance in the construction and operation of nuclear power plants. Technical support provides necessary assistance to conduct investigations, inspect problem facilities, followup allegations, analyze licensee events for their safety significance and the appropriateness of corrective actions, communicate common problems to staff and licensees, and maintain fixed and mobile laboratories (e.g. Non-Destructive Examination van). The Incident Response Program affords assurance that the agency is prepared to respond to incidents, including twenty-four hour staffing of the agency's Operations Center.

ENFORCEMENT

The Enforcement Program is carried out to ensure compliance with regulations and license conditions; to obtain prompt correction of noncompliance; to deter further noncompliance; and to encourage improvement of licensee performance. The enforcement program employs a series of sanctions that escalate according to the seriousness of the noncompliance and the past history of licensee performance. Notices of violation, civil penalties and orders are issued, as necessary, to assure safety and compliance.

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Systematic assessments of licensee performance are conducted for operating power reactors and reactors under construction. The program involves collecting information on a periodic basis about the overall performance of a licensee in a number of important areas (e.g., management involvement in assuring quality, enforcement history, and reporting and analysis of events). Emphasis is placed on understanding the reasons for licensee performance in these areas, sharing the understanding with the licensee, and then focusing agency inspection accordingly.

SUPPORT FOR PROBLEM FACILITIES, ALLEGATIONS AND INVESTIGATIONS

Expertise is needed to assist in inspections and investigations. Facilities where major problems have been identified have drained resources from other programs and facilities. Nuclear power plants such as Braidwood, Waterford, Comanche Peak, and Diablo Canyon have required hundreds of staff months of additional inspection and millions of dollars of technical assistance funds to resolve problems and allegations. More recently an investigation into the cause of the event at Davis Besse has exemplified the need for resources in this area. Problems at material licensees have required augmented effort. Special inspections are also required to assist in investigations responding to allegations of safety and safeguards violations at nuclear facilities.

LICENSEE EVENT ANALYSIS AND GENERIC COMMUNICATIONS

Licensee event reports are analyzed to identify problems with potential safety significance which may be common to specific types of plants. Bulletins and information notices are then prepared to inform licensees, vendors and the agency staff of these problem areas, and to recommend or require corrective actions. More than 10,000 event reports are reviewed and approximately 100 communications are issued annually.

INCIDENT RESPONSE PROGRAM

A new agency Operations Center was opened in FY 1985, improving the agency's capability to respond to incidents. In addition, systems and programs for supporting reactor safety assessment, protective measures, information management, response training, and communication of information are being upgraded. Program Support funding will provide improved communications during an emergency by using data already available in licensee computerized data systems, such as safety parameter display systems.

FUEL CYCLE AND MATERIALS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 661	$ 920	$ 970
(Staff)	(95)	(87)	(87)

The Fuel Cycle and Materials Program provides inspections for the processing of nuclear materials at fuel cycle facilities, the use of nuclear and radioactive material at medical, academic and industrial institutions, and the transportation of such materials.

FUEL FACILITIES INSPECTIONS

Radiological safety inspections will be conducted at 60 fuel facilities each year in FY 1986-1987. These facilities include uranium mills, uranium conversion facilities, and fuel production plants. Physical security and material control and accounting inspections will be performed at the 10 fuel production plants. Inspections at fuel facilities help to ensure that unsafe conditions involving unnecessary and harmful radiation exposure to employees and the public do not develop, that materials are properly controlled to prevent a nuclear criticality accident, and that security and material control practices are adequate to prevent diversion or theft of fissionable materials.

MATERIALS INSPECTIONS

Approximately 2700 onsite radiological safety inspections of approximately 9000 materials licenses will be conducted per year in FY 1986-1987 to help ensure that unsafe conditions involving unnecessary and harmful radiation exposure to employees and the public do not develop. Nuclear materials are used by firms dealing with source, byproduct, or special nuclear materials in nuclear medicine, radiography, industrial testing, well-logging, and academic research. Inspections of transportation and the handling and storage of radioactive wastes are also required.

In addition to routine periodic inspections of licensees, the requested resources will provide for the evaluation and followup actions on 250 licensee-reported incidents, 225 medical misadministrations, and NRC action on 270 expired licenses. In the latter case the agency must determine whether the ex-licensee still possesses radioactive material, and, if so, it must act to ensure that the material is transferred to an authorized NRC or Agreement State licensee.

DECOMMISSIONING AND CLOSEOUT RADIATION SURVEYS

Decommissioning and closeout radiation surveys at materials licensees and fuel facilities will be conducted as needed to determine whether the property can be released for unrestricted use. These determinations are based on independent radiation surveys to ascertain whether the licensee has successfully decontaminated its property as it has stated in its report to the NRC.

SPECIALIZED TECHNICAL TRAINING PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 729	$ 1,979	$ 2,300
(Staff)	(16)	(20)	(23)

The Specialized Technical Training Program is managed by the Office of Inspection and Enforcement and operated at the Technical Training Center near Chattanooga, Tennessee. This program provides training to region-based and resident inspectors, other agency technical staff, and state and foreign government employees. Courses are offered in design, technology and operation of pressurized and boiling water reactors, and in other specialized areas of reactor construction, health physics, quality assurance, and operator license examiner training. Training is conducted in conventional classrooms, scientific laboratories, nuclear power plants, and reactor control room simulators. This specialized training provides added technical experience for the staff to perform inspections and safety reviews for reactors, fuel cycle facilities and materials-use activities.

Resource increases are to support specialized technical training courses which will be developed and conducted in a wide variety of specialties; for example, electrical codes, welding, health physics, etc. Reactor simulator usage will be increased for inspector and operator license examiner training. Increases in resources are based on increased demands for courses in engineering and inspection fundamentals as well as the need to keep all NRC inspectors abreast of new developments in BWR/PWR technology, radwaste, health physics and quality assurance. Another significant factor contributing to increased training resource requirements is NRC's expanded entry level hiring program, which requires extensive training of new employees in a wide variety of disciplines.

MANAGEMENT DIRECTION AND SUPPORT PROGRAM

	FY 1985 Estimate	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(141)	(139)	(139)

The resources requested for management direction and support provide for the overall policy guidance and management direction of the Inspection and Enforcement programs by the Office Director and the Regional Administrators. Requested resources also provide for technical and administrative support to the Director and Regional Administrators.

NUCLEAR REGULATORY RESEARCH PROGRAMS

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations..............................$113,460

Total Funds and Staff

	FY 1985 Actual	FY 1986[1] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 12,550	$ 11,780	$ 10,210
Program Support	132,982	118,400	99,040
Administrative Support	3,847	3,960	3,690
Travel	580	570	520
Total Obligations	$149,959	$134,710	$113,460
(Staff)	(226)	(207)	(180)

Program Support Funds and Staff

The Nuclear Regulatory Research program support funds and staff are allocated for major programs, as shown below. The program support funds are primarily for contractual work by Department of Energy laboratories, private contractors, nonprofit organizations (universities, foundations, etc.), and grantees. The narrative that follows describes the programs and the reasons they are needed.

	FY 1985 Actual		FY 1986[1] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
Reactor Engineering	$ 38,817	53	$ 39,408	53	$ 40,100	51
Thermal-Hydraulic Transients	23,964	18	21,457	16	16,400	14
Accident Evaluation	39,965	27	29,900	23	19,000	19
Reactor Operations & Risk	16,610	55	15,225	51	11,800	41
Waste Mgmt, Earth Sciences & Health	13,626	49	12,410	42	11,740	35
Management Direction and Support	0	24	0	22	0	20
Totals	$132,982	226	$118,400	207	$ 99,040	180

---

[1] Estimates do not reflect 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

DESCRIPTION OF PROGRAMS

The programs of the Office of Nuclear Regulatory Research (RES) are an essential and integral part of the regulatory process. Safety research supports nuclear regulation by providing defensible technical bases for regulatory action to ensure public health and safety. The program emphasizes early identification of potential problems with operating reactors, where problems continue to arise, and the development of criteria for the safe disposal of nuclear waste. The problems and corresponding topics of research are programatically grouped into six major areas:

1. Aging and Degradation in Power Plants

   A large number of reactor plants have been operated for a significant fraction of their licensed life. Corrosion, radiation embrittlement, and fatigue have raised specific questions about the continued safety and viability of many of these plants; in particular, about the integrity of the primary coolant pressure boundary. Widespread and potentially serious problems have occurred. These have included cracked piping at boiling water reactors, defective valves and relays, and inadequate means for detecting and characterizing flaws. Although many of these questions are being resolved by research and regulatory action, they are likely to continue to arise. Further, there may be other presently unrecognized degradation mechanisms occuring, therefore, research needs to be done to identify latent problems and incipient failures before they occur.

2. Complex Operational and Thermal-Hydraulic Transients

   Previous research on complex operational and thermal hydraulic transients has been largely oriented toward large-break loss-of-coolant accident (LOCA) issues and has reflected an underlying assumption that thermal hydraulic transients generally could be adequately characterized by a limiting case, the large-break LOCA. The Three Mile Island accident and other operating experiences have refuted the assumptions of a limiting thermal hydraulic case. Anomalous transients and small-break LOCAs which have occurred have had serious safety implications for a broad class of reactors, but since reactors are not standardized, direct extrapolation of the safety significance of a given accident is not readily achievable. Therefore, development and maintenance of complex thermal analysis codes, as well as experimental analysis of potential accident sequences and verification of computer codes are required.

3. Consequences and Risk from Severe Accidents

Assessments of the consequences of severe accidents have to be based on a definitive demonstrable understanding of the physical processes which occur in such accidents such as the release and transport of radioactive materials, the form in which they occur, the environmental conditions that are created by the accident, and the resultant loads on the containment system. Prior to the Three Mile Island accident several generic "source terms" were used to characterize the complete range of severe accidents. The experience of TMI revealed the defects of the generic "source term". Much basic research on source term phenomenology has been completed. The research emphasis is now directed toward an assessment of the risk of typical light water reactor designs and quantification of the remaining uncertainties so that the improved understanding of the actual processes which occur during a severe accident can be applied to severe accident decisionmaking and a reevaluation of the affected regulations.

4. Plant Operations and Risk Analysis

Significant advances have been made in the development of probablisitc risk assessment (PRA) techniques in the past decade and in research on radioactive source terms that would be potentially produced by degraded core accidents. RES directed much of its FY 1985 and FY 1986 effort to the preparation of an integrated reactor risk assessment report (NUREG-1150) that will be published in draft for public comment in FY 1986 and will assemble and interpret the most recent information on accident frequencies and risk during severe reactor accidents for six reference plants. The bulk of the FY 1987 effort will be directed to making recommendations as to the proper use of this information in regulatory decisionmaking and plant-specific applications. Such applications include assessment of: the risk reduction potential of various existing and proposed regulatory requirements; the risk represented by specific reactor conditions in establishing limiting conditions for operation and in planning specific inspection activities.

5. Seismic Analysis

With the continuing improvement in understanding of geology and seismology we have found that a number of older plants have been designed for seismic hazard levels that are below current criteria. Although we believe that there are considerable seismic safety margins in present designs, there is an urgent need for improved bases and methods for properly characterizing seismic hazard for plants, especially those in the Eastern U.S., and for well-validated methods for seismic analysis that can be used to reassess the older operating plants to determine whether adequate safety margins do exist and to quantify these margins.

6. Nuclear Waste Disposal

Disposal of both low and high-level nuclear waste involves issues that are at the forefront of technology related to waste form, waste package integrity, and the behavior of leaked radionuclides in the disposal facility environment and the biosphere. Regulatory research is required to develop the methods and data bases needed to evaluate the adequacy of applicant submission to meet regulatory requirements, particularly those on radionuclide release limits.

The Regulatory Research Program will develop for the Nuclear Material Safety and Safeguards Office the analytical methods and techniques needed: to assess waste package and facility backfill integrity, to evaluate ground water hydrology, and to determine radionuclide concentrations and dose release scenarios. These analytical capabilities are essential to an independent evaluation and review of applications for waste disposal facilities.

The emergence of new technical issues and the existing wide variety of plant designs require continuing research as described in the six major areas above. NRC must therefore maintain technical expertise for future resolution of regulatory issues. In an effort to meet these needs and to maximize productivity while experiencing a decline in funding, the Office of Nuclear Regulatory Research is working towards integration of specialized scientific and engineering areas of expertise at selected principal national laboratories. Identifying well-defined areas of technical cognizance for each of several laboratories will greatly facilitate the execution and interpretation of research results, and maintain a capability in required technical areas to respond to anticipated technical operating problems having impacts on safety.

REACTOR ENGINEERING PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$38,817	$39,408	$40,100
(Staff)	(53)	(53)	(51)

Design errors, construction defects, and degradation due to aging and wear at some nuclear plants increase the probability of the initiation of accidents or the reduced capability to mitigate the effects of accidents should they occur.

Reactor Engineering Research is directed to providing the licensing staff with the basis for taking timely action regarding the safety of operating plants and determining whether to permit continued operation or require shutdown or modification of plants. Events that require such decisions are, for example, adverse experience with components in one or more operating plants, problems uncovered by inspectors, changes in safety requirements from those for which a plant was approved, results of domestic and foreign research, and operating experience. The research involves assessing the suitability of structures and components for the intended service (including abnormal and anticipated accident conditions), the effects of time, operational environment (e.g., temperature, humidity, radiation), and conditions of operation on the continued safety of those structures and components, and the means for surveillance, inspection, testing, maintenance, repair, and replacement.

AGING AND DETERIORATION OF OPERATING PLANTS

Aging and service wear of components could result in deterioration to a point at which stresses from normal operation, transients or accidents could cause a "common mode" failure resulting in an accident or in rendering inoperable redundant safety systems needed to mitigate accidents. Research is being conducted to identify effects of aging and service on structures and components that would have an impact on the safety of operating reactors and to evaluate such measures as surveillance, inspection, testing, maintenance, repair, and replacement that can be cost effective in dealing with such effects. This research will provide a basis for assessing the safety of older plants and will facilitate relicensing to extend effective plant life beyond that originally anticipated.

Research will determine the age-related deterioration of such equipment as pressure vessels, piping, cables, valves, pumps, and motors in the anticipated environment and operating service conditions. Samples and components taken from the Shippingport Nuclear Power Plant at Shippingport, Pennsylvania, during decommissioning will be examined. The embrittlement of steel from the decommissioned German KRB-A reactor vessel, which provides a good representation of material, operating temperature and irradiation conditions of U.S. reactors, will also be evaluated. The availability of the German reactor vessel material and the Shippingport materials and equipment combined provides a unique opportunity to check predicted deterioration of both materials and equipment during operation against actual deterioration. The equipment and materials selected will be based on their safety significance and their applicability to those in currently operating nuclear plants, and the results will therefore contribute to regulatory decisions regarding the continued safety of operating reactors.

In FY 1987 tests will be performed on naturally-aged equipment (i.e., removed from operating or decommissioned reactors) to determine how aging degradation effects performance of safety functions. A data base will be developed for independent evaluation by NRC to assess degradation processes to support extended operation including that beyond the current 40-year license. Safety systems will be monitored and the results evaluated to determine the impacts of aging degradation on accident initiation, safety support failure, and core melt probability.

EFFECTS OF EARTHQUAKES ON OPERATING PLANTS

Probabilistic risk studies of some U.S. nuclear power plants currently estimate that earthquakes are potentially significant causes of risk to the public from some power plants. Earthquakes affect an entire plant and can potentially damage the weakest components wherever they may be located. Piping system designs for earthquakes have resulted in "stiff" piping systems that have increased the susceptibility to pipe failures under certain circumstances.

Because of recent research data on earthquakes, new procedures for estimating the capacity of nuclear power plants to withstand earthquakes larger than their original design basis are being developed. These procedures will provide the basis for sound regulatory decisions without unnecessary modifications being required. These procedures must be validated by improved data bases from experience and experiments before they can be used with confidence. Large-scale complex experimental facilities at overseas locations in Germany and Japan are being used or pursued as part of international cooperative programs to validate these procedures. NRC pays only a small part of the total cost of these overseas experimental programs. Additionally, NRC research is being conducted to determine the failure level of concrete structures and such critical components as electrical equipment and piping to supplement the existing data base that is being gathered in cooperation with the Electric Power Research Institute (EPRI). In FY 1987 development and demonstration of procedures to estimate seismic margins will be completed. Also, the gathering and evaluation of failure levels of equipment to supplement the existing data base will be completed.

REACTOR PRESSURE VESSEL SAFETY

Brittle failure of the pressure vessel, which could result in a core melt accident, must be prevented by ensuring adequate safety margins. Experimental research on the effects of temperature, stresses, irradiation and flaws on the primary system pressure boundary is necessary to confirm the current regulatory position that pressure vessels will not fail by brittle fracture during service or in the case of an accident. Results of experiments to be completed in FY 1987 on large-scale crack arrest tests will be combined with the results of pressurized thermal shock (PTS) tests to validate the existing regulations covering PTS. Other tests and analyses will also be completed in FY 1987 of irradiated specimens to validate that the ASME Code Section XI reference fracture toughness curve can confidently be used to predict the embrittlement increases in vessels for pressure-temperature limits and for PTS analysis.

ADEQUACY OF SAFETY EQUIPMENT UNDER ABNORMAL CONDITIONS

Qualification tests which show that certain equipment will operate under normal conditions may be insufficient by themselves to assure safety. Some safety equipment (e.g., valves, cables, radiation monitors) must remain in operation in the event of accidents or the occurrence of such severe natural phenomena as earthquakes, floods, tornadoes, and hurricanes if the public is to be protected from radioactive releases from the plant. The standards used by industry to qualify equipment for these operating conditions need validation to confirm regulatory positions and identify improvement where needed. Research will continue to determine the adequacy of methods for the dynamic qualification of safety equipment and the environmental qualification of mechanical safety equipment and to develop modified methods as needed. In FY 1987 experiments will be completed on containment isolation valves that will be used to predict their leak behavior under postulated design basis and severe accident conditions.

The containment building is the final barrier to the release of radioactive material to the environment after a severe accident.

It is important that we know at what pressure and temperature the containment building will have unacceptable leakage. NRC experimental research is being conducted on a scale model concrete containment building to validate calculational methods used to predict the structural and leak behavior of containments under severe accident conditions. Separate experiments are also being conducted on containment penetrations such as airlocks, hatches, and valves to evaluate their leak behavior. This research supports the NRC severe accident policy. In FY 1987 experiments on a scale model concrete containment building will be completed. The results of these experiments will establish the technical basis for predicting the structural and leak behavior of containment under severe accident conditions.

PIPE CRACKING AND THE LEAK-BEFORE-BREAK PRINCIPLE

There have been numerous instances of cracked piping in nuclear power plants. Piping in most operating nuclear plants was designed on the basis that a double-ended guillotine break is the major accident against which the plant must be protected, a conclusion that led to the installation of numerous pipe whip restraints. If the proper design basis for certain piping systems is to assume that pipes will leak before breaking, what were believed to be conservative designs may actually have reduced, rather than enhanced safety. The restraints also reduce safety by interfering with accessibility for in-service inspection, making inspections more difficult and resulting in increased radiation exposure for workers performing inspections. In addition, possible errors in installing the massive restraints could result in excessive stresses on piping systems not accounted for in their design.

Changes in NRC regulations on piping, particularly regarding the acceptability and implementation of the leak-before-break position will be either completed or well under way by FY 1987. The research in FY 1987 will address such topics as dynamic loading (seismic effects and water hammer), high-energy pipe tests, and crack opening areas. Tests will be conducted in FY 1987 of large-diameter cold-leg pipes to validate and refine pipe fracture analysis methods used in the licensing process to provide a consistently conservative assessment of the load carrying capacity and eliminate the current discrepancy between measurements and predictions. Other testing (in cooperation with EPRI) to verify the adequacy of the industry code for safe lifetime design of nuclear piping systems, to determine the margins in the code, and to recommend changes to the code, as appropriate, will be nearing completion. Research on cracking in stainless steel pipes of boiling water reactors will focus on improved leak detection and inservice inspection and on verification of the safe lifetime for crack repairs such as weld overlays. Completion of field testing of improved leak detection systems in FY 1987 will be important to the use of the leak-before-break principle in regulation. By auditing industry test methods, improvements will be made and criteria developed for qualifying nondestructive examination personnel to improve the reliability of finding flaws and at the same time help eliminate needless and costly "repairs" of uncracked pipes. The above research will contribute to confirming the technology based on the leak-before-break principle as a replacement for the double-ended guillotine break as the design basis for certain safety-related piping in nuclear power plants. The implementation of such an action would permit the removal of pipe restraints and jet impingement barriers thereby enhancing the accessibility and inspectability of piping.

STEAM GENERATOR INSPECTION AND REPAIR

Steam generator tubes can be damaged and cracked during service by corrosion and by stresses from vibration, cleaning and other effects, and a fix for one problem, e.g., tube denting, sometimes causes a different problem, e.g., tube thinning. Because these mechanisms can affect many tubes in the steam generator, multiple tube failures may result from an internal transient (e.g., pressure surge) or an external event (e.g., earthquake) with the potential of discharging primary coolant through the steam relief valves located outside containment. It is essential that damaged tubes be detected and evaluated for removal from service. Upon completion of the experimental work in FY 1986, the technical basis will be established in FY 1987 for upgrading the regulatory guide criteria for plugging tubes or allowing them to continue to operate, and for improved methods for tube inspection to ensure that unsafe tubes are not missed and allowed back in service. This research is jointly sponsored with the Electric Power Research Institute in the United States and with France, Italy, and Japan.

THERMAL-HYDRAULIC TRANSIENTS PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$23,964	$21,457	$16,400
(Staff)	(18)	(16)	(14)

The Thermal Hydraulic Transients Program provides verified computer codes to the NRC licensing staff for use in conducting safety evaluations of licensed nuclear plants for a wide range of possible transients and accidents such as small- and large-break loss-of-coolant accidents, feedwater-line and steam-line breaks, and overcooling and undercooling transients. The NRC licensing staff uses verified computer codes to independently evaluate plant designs to ensure they are capable of safely responding to plant transients. This is done to ensure that analyses performed by reactor vendors or utilities for licensing submittals are accurate and will result in operating procedures that will prevent serious accidents.

Successful operation of the emergency core cooling system (ECCS) mitigates the effects of loss-of-coolant accidents. Scenarios in which ECCS does not function as intended are investigated under the Accident Evaluation program described later in this document. Thermal-hydraulic codes are developed and verified using data from experiments conducted in integral and separate effects test facilities. The decrease in funding in this program is due to the termination of Semiscale experimental testing and deferring the Multi Loop Integral Systems Test (MIST) follow-on test program and the continued development of the nuclear plant analyzer.

INTEGRAL FACILITIES

Since the Babcock and Wilcox nuclear plant design (such as TMI) incorporates features which affect its safety performance in ways that are significantly different from other pressurized water reactors, separate experiments must be conducted. NRC is conducting a joint program with the industry to study small-break loss-of-coolant accidents, feedwater- and steam-line breaks, and overcooling and undercooling transients for Babcock & Wilcox type reactor plants. These accidents have been identified by operating experience and risk studies as requiring regulatory attention. The joint experimental program with industry will be performed in FY 1986 using the Multiloop Integral System Test (MIST) facility in Ohio. The June 9, 1985, temporary loss of feedwater event at the Davis-Besse plant, which has a Babcock & Wilcox designed reactor, raised important safety issues such as the effectiveness of B&W feed and bleed procedures to cool the plant after upset conditions. During FY 1987, data from the 1986 tests will be analyzed and interpreted to help provide regulatory answers for this and other anomalous transients in B&W-designed reactors. The NRC regulatory staff has requested a follow-on program in MIST to provide additional safety information to help resolve operational problems being experienced at Babcock & Wilcox reactors. Funding is not available for such a program but some reprogramming may be possible. Domestic experimental programs studying potential accidents in Combustion Engineering and Westinghouse type reactor plants will be completed with the completion of the Semiscale program in Idaho in FY 1986. Analysis of the Semiscale results will be completed in FY 87 and a report issued. With the termination over the past few years, including FY 1986, of the Loss of Fluid Test (LOFT), Semiscale, the General Electric boiling water reactor test facility and the B&W and Westinghouse pressurized water reactor test facilities, there will be no integral system test facilities in the United States.

The Upper Plenum Test Facility (UPTF) in Germany and the Slab Core Test Facility (SCTF) in Japan, together with the NRC-supplied instruments and computer codes, will provide data to help resolve the thermal-hydraulic regulatory issues such as: the effectiveness of upper plenum injection in Westinghouse two loop plants, resolution of full scale ECC bypass concerns, and full scale data on flood/fluid mixing in the downcomer under pressurized thermal shock conditions. Construction of UPTF was completed in 1985; the experimental program will take place in FY 1986 through FY 1988. A report on the Japanese experiments will be issued in FY 1987 typing the results to input needed for the NRC regulatory program.

The Rig of Safety Assessment IV (ROSA-IV) program in Japan is studying small-break loss-of-coolant accidents, feedwater- and steam-line breaks, and overcooling and undercooling transients at a very large scale with the ability to confirm the large quantity of safety test data from the smaller Semiscale Facility. The ROSA-IV experimental program began in FY 1985 and will continue until FY 1988. NRC's support to these programs is in the form of instrumentation, computer codes, and analyses. The resulting test data will be used by NRC to assess the capability of its own computer codes as well as those of industry to simulate the design basis transients.

SEPARATE EFFECTS

Separate effects experiments supply data in areas where a better understanding is still required to reduce uncertainties in safety phenomena and to maintain and improve thermal-hydraulic expertise for use in responding to accidents. Much of the work is currently being done at universities, including steam generator heat transfer at MIT, Babcock & Wilcox simulation at the University of Maryland, boron mixing at Purdue University, and core heat transfer at Lehigh University. Computational models will be derived from the results of these research efforts and will be incorporated into the NRC safety analysis codes in FY 1987.

TRANSIENT MODELS AND CODES

Experimental data are used to verify the computer codes and to improve the modeling of thermal-hydraulic phenomena. The principal codes developed by the NRC are TRAC-PWR and RELAP5 for use by the NRC regulatory staff in the analysis of pressurized water reactor transients, and TRAC-BWR and RAMONA for the analysis of boiling water reactor transients. Major development of the codes is generally complete. Efforts are continuing in the areas of code maintenance, code assessment and, error corrections. The Nuclear Plant Analyzer (NPA) allows NRC licensing staff to perform direct hands-on analyses of regulatory/safety incidents. The NPA approach not only uses the capability of NRC's most complex and versatile computer codes that could heretofore be performed only by Department of Energy laboratory code experts but will also allow NRC to use dedicated mini-computers employing parallel processing techniques in the near future pending successful development. NRC followup and response to the June 1985 Davis-Besse accident were considerably enhanced and speeded up through rapid analyses of potential consequences and mitigative actions performed on the prototype version of the NPA. Maintenance of NRC NPA capability developed in previous years would be continued in FY 1987. Because of funding limitiations, NRC is not able to continue development of advanced plant analyzer techniques which would allow NRC to have a self contained minicomputer driven system at headquarters. Current inefficiences reslt from the need to run from mainframe computers located at DOE national laboratories. This action also stops work on NRC's only plant analyzer capability for boiling water reactors. With the elimination of U.S. integral testing capability and the reduced resources for code assessment an international code assessment and application program was established in FY 1985 and will continue for approximately five years. The NRC has established agreements with different countries in which the codes are provided to them in exchange for nuclear plant start-up test data not available to NRC from U.S. plants and data from their national test facilities in Italy, Sweden, UK, and Switzerland which is used by their analysts for assessment and applications of the codes. The results of evaluations of these assessment calculations, and review of DOE laboratory contractor code evaluations, will form the basis for any code improvements to be performed in future code versions. This will provide for a broadly supported technical basis for any code improvements in future years. Code improvements to NRC's two major thermal hydraulic safety analysis codes, TRAC and RELAP, resulting from these assessments will be made during FY 1987 and the documentation issued.

ACCIDENT EVALUATION PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$39,965	$29,900	$19,000
(Staff)	(27)	(23)	(19)

The FY 1986 and FY 1987 Accident Evaluation Research Program is required to complete the technical basis for the closure of severe-accident issues, in particular, the radioactive source term, in accordance with the provisions of the Commission's Severe Accident Policy Statement. The ability to predict how radioactive materials are transported and released during postulated reactor accidents lies at the very heart of the regulatory process. The need for and extent of protection of the public from undue risk are measured by careful assessment of possible accidents and the releases of radioactive materials from such accidents. Closure of this issue requires the systematic reevaluation of NRC regulations based on the new source-term data. Some of the regulations that must be reevaluated include those providing requirements for containment performance, environmental equipment qualification, fission-product attenuation systems, emergency planning, and siting. Closure of this issue also requires the systematic safety evaluation of operating plants and the determination of criteria for future plants. The research consists of an integrated program of both in-reactor and laboratory experiments and the development and validation of accident-analysis models and codes. This program has attracted significant financial support from foreign program partners to share program costs.

The recent NRC program to provide current snapshot reassessment of the accident source term based on the best research information then available, has provided a technical basis for determining the values of the source term for different nuclear plants and for different accident sequences as well as a preliminary basis for determining the uncertainties in the source term. It was argued after the TMI-2 accident that the low fission-product release to containment in that accident showed that the source terms currently required by NRC's regulations were too large. The source term reassessment, done for only two plants thus far, gave a reduction in the calculated source term for some but not all plants and accident sequences, but also showed that the uncertainties remained large. An independent assessment of this work by the American Physical Society (APS) generally endorsed the technical approach, but stated that completion of the research currently planned in the FY 1986 and

FY 1987 Accident Evaluation program was important to improve the data base and reduce uncertainty for the accident-analysis codes and to reduce the current large uncertainties in severe-accident phenomenology. The decrease in funding in this program is the result of terminating Annular Core Research Reactor fission product experiments, fission product and containment aerosol experiments, separate effects testing in support of core melt codes and core melt aerosol release tests.

SEVERE-ACCIDENT ANALYSIS

In FY 1987 dominant severe accident sequences that have been identified from probabilistic risk assessments will be examined for selected operating plants. These analyses will utilize input from cooperating utilities to ensure realistic and accurate representations of the plants. This work will provide information about the effects of timing and the mode of containment failure on severe accident consequences. Societal effects will be evaluated. Computer codes and analysis techniques developed under this research give NRC a unique ability to find accident sequences that are likely to result in core damage and an ability to evaluate vendor-proposed mitigating actions for their success potential. During FY 1987, the high risk sequences which have been identified by NRC and industry risk evaluations of seismic events, internal floods or fires, and adverse operator actions will be used as the starting point for severe accident analyses to explore actual plant response to these events and the possibility of operator actions which could reduce, mitigate or stop release of radioactive products to the public.

DAMAGED FUEL

The work on damaged fuel is beginning to provide characterization of the reactor core during core-melt progression as input for determining the core hydrogen generation, fission-product release and behavior, and the core-melt threat to the containment integrity. In FY 1986, this work includes small tests in the Annular Core Research Reactor (ACRR) in New Mexico on melt progression to fuel-melt temperatures and studies of hydrogen generation in the dominant severe accident sequences. Analysis of the data from these experiments and the application of the new knowledge to regulation will continue in FY 1987. A full-length coolant boildown, severe fuel damage test under BWR conditions will be performed in the Canadian NRU test reactor in FY 1986 to provide needed data on hydrogen generation in BWR severe accidents. This data will be analyzed and reported in FY 1987. The four Power Burst Facility severe fuel damage experiments were completed in FY 1985. Post test examination, analysis, and evaluation of the data obtained from this test series will be completed in FY 1987. Validation of the melt progression (MELPROG) code and the severe core damage analysis package (SCDAP) code is required for use in severe fuel damage source term assessment and for benchmarking simplified severe accident safety analysis codes such as the new MELCOR code. MELCOR in turn will be used for future severe accident analyses and specifically to calculate source terms. This validation uses results of German and NRC laboratory work, along with results of the DOE examination of the TMI-2 core and the EPRI tests in the TREAT test reactor in Idaho.

CONTAINMENT LOADING

Research on the effects of the damaged core on containment loading will be used to provide the technical basis for closure of issues related to containment performance under severe accident conditions. Probabilistic risk assessment has shown that the public health consequences of accident sequences with early containment failure are a major factor. By contrast, a delayed containment failure is expected to greatly reduce the impact on public health. It is important that the current containment performance criteria be revised to reflect recent research results so that current regulatory practice will reflect our current knowledge of accident phenomena. Uncertainty in the timing and magnitude of key containment load phenomena that, in turn, lead to uncertainties in evaluating containment performance will be resolved as experiments are completed. In FY 1987 the experimental program on key phenomena that govern containment loading in severe accidents will be nearly completed. This work includes core/concrete interactions, fission-product release from the reactor cavity, energy transfer to the containment atmosphere, and the natural processes that result in fission-product retention in containment. Analysis of the data from these experiments and the application of the new knowledge to regulation will continue in FY 1988.

FISSION-PRODUCT BEHAVIOR

Additional fission-product research is needed to reduce uncertainties found to be unacceptable by the American Physical Society for the NRC source term reevaluation and severe accident policy. A detailed uncertainty analysis of the source term implied by selected accident sequences is being performed in FY 1986. These uncertainties involve the release and transport of actinides and lanthanides and other nonvolatile elements and fission product chemistry at high temperature and pressure. The program in FY 1986 includes completion of separate-effect experiments on fission-product and aerosol release and transport, both in the laboratory and under in-core severe accident conditions in the Annular Core Research Reactor. Analysis and reporting of these tests will be performed in FY 1987 and FY 1988. Additional testing in the Annular Core Research Reactor is needed to explore differences between fission product releases observed in prior in-pile tests, however, resource constraints will not allow these tests. Confirmatory integral (multi-effect) validation tests with full-length test fuel bundles to determine fission-product release and hydrogen generation rates will be performed in the Canadian NRU test reactor. Analysis of the data from these experiments and the application of the new knowledge to regulation will continue in FY 1988. Important complementary data will be available from Electric Power Research Institute experiments. These results will be used to verify the current source-term computer codes.

REACTOR OPERATIONS AND RISK PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$16,610	$15,225	$11,800
(Staff)	(55)	(51)	(41)

The Commission is presently faced with major decisions on the need to impose additional safety requirements on the licensed nuclear power plants in order to ensure that the risk to the public is maintained at acceptable levels. These decisions could potentially involve the large expenditures of funds by the nuclear industry. Clearly, decisions of this importance must be based on analysis of the best information available on the current levels of plant safety and on the costs and effectiveness of remedial risk-reduction measures. Consequently, quantitative assessments of the probabilities and consequences of reactor accidents have become an essential element in the Commission's decisionmaking process, as evidenced by the issuance of its policy on severe accidents and its work toward adoption of a quantitative safety goal. This work includes research in the areas of reliability and risk methodology, data and uncertainties, regulatory and inspection applications and severe accident risk. Each of these areas is discussed later in this section.

Significant advances have been made in the development of probabilistic risk assessment (PRA) techniques in the last decade. However, additional research is still needed to make estimates of reactor risk more reliable. The recently completed American Physical Society review of research on the releases of radioactivity in a severe reactor accident identified several areas in which additional research effort was needed before revised risk estimates could be confidently factored into the regulatory program. Recent events, including serious occurrences at the Salem, Davis-Besse, and Browns Ferry nuclear generating stations, provide additional support for the need to conduct systematic appraisals of the reliability of safety systems and the current level of plant risk and to bring to closure the outstanding unresolved and generic safety issues. Examples of such issues include systems interaction in nuclear power plants and shutdown of decay heat removal requirements.

For these reasons, the FY 1985 and FY 1986 risk assessment programs have been directed to the preparation of an integrated reactor risk assessment report that would assemble and interpret the most recent information on accident frequencies and risk during severe reactor accidents for six reference plants. A methodology will be adopted by NRR, drawing heavily upon proposals developed by IDCOR and insights gained from the RES risk assessment programs, to extrapolate risk insights gained through this study to the approximately 100 licensed (operating and near-term operating) reactors. In FY 1987 resources will be directed to closure of the severe accident issue and to make available important risk-based information to the licensing and inspection staffs. As a result, work will be deferred on several outstanding reactor safety issues in safeguards and transportation regulations, and for better methods to assess the risk of external events and common cause failures (e.g., fires) in operating reactors. The decrease in funding in the program is the result of terminating work on accident consequence codes and safeguards and reducing regulatory analysis activities including work on component uncertainties and the Risk Information Management System.

RELIABILITY AND RISK METHODOLOGY

One shortcoming of probabilistic risk assessment is that current methods do not have the capability to adequately evaluate the risk contribution of many important accident initiators such as external events (earthquakes, floods) or common cause and dependent failures (fires, human error). Recent probabilistic risk assessments have concluded that these factors could be major contributors to plant risk, but with large uncertainties. Improvement in the ability to analyse such contributors would significantly improve the Commission's ability to make severe accident decisions. To provide a more complete plant risk profile for Commission decisionmaking, methods for including such initiators in risk assessments are being developed and will be tested during FY 1986. This research is being conducted in a cooperative program with Commonwealth Edison Company at Commonwealth's LaSalle Unit 2 station. This program will produce improved methods for conducting more comprehensive PRAs which will be made available to NRC staff and industry in FY 1987. These methods will provide NRC with an enhanced capability to fully evaluate licensee responses to the Severe Accident Policy, to resolve outstanding safety issues, and to revise the reactor design criteria. Following publication of these methods, work in the area of methods development is expected to be at a much reduced level, focusing on any remaining deficiencies in methods and on the resolution of specific unresolved and generic safety issues.

DATA AND UNCERTAINTIES

In addition to research to improve risk methods, there is a corresponding need to collect and analyze data on the performance and failure rate of plant systems and components. This activity can help to ensure that the results of reactor risk assessments are as accurate and reliable as possible and can identify incipient safety problems in operating plants thereby avoiding events that might pose a risk to public health such as those that occurred recently at the Davis-Besse and Salem stations.

Data acquisition and retrieval methods developed by the research program have reached the point at which they can be transferred to NRC's Office for Analysis and Evaluation of Operational Data. Additional research in this area in FY 1987 will be directed toward identifying the root causes of plant system and component failures. Examples of such root causes are improper maintenance or installation and human error. The data obtained in these programs will immediately be used by NRC's inspection and licensing staff to evaluate technical specifications for equipment performance, allowed outage times, and surveillance and maintenance intervals. By the end of FY 1987, RES will have completed the development of models and techniques that will provide an analytic basis for revising plant technical specifications.

REGULATORY AND INSPECTION APPLICATIONS

The application of PRA techniques to major safety issues facing the Commission has, in many cases, provided a powerful tool for ensuring that Commission actions are cost effective in reducing the risk to the public.

Specific PRA results have recently been used to support closure of several unresolved safety issues such as Anticipated Transients Without Scram (ATWS), Station Blackout, Decay Heat Removal, and Pressurized Thermal Shock. During FY 1987 and beyond, research will continue to support the resolution of outstanding safety issues such as Generic Issue B-61 (Allowable ECCS Equipment Outage Times) and any additional safety issues as they are identified.

Based on research conducted in FY 1985 and FY 1986, using the probabilistic risk assessment of the Arkansas-1 nuclear power station development of an integrated, computer-based risk information management system for use by regional and headquarters staff will continue in FY 1987. This system will provide IE and NRR Headquarters and regional staff with risk-based information to assist them in conducting their inspection and licensing activities more effectively. It will also provide inspectors with real-time data on plant status and the impact of equipment outages on risk and thus will provide a more effective method for evaluating limiting conditions of operation. In addition, the system can be used by the NRC staff to identify and assess procedural changes and modest equipment modifications that may be effective in reducing risk. In FY 1987, the merits of an integrated system to extend the modeling data base to the 100 operating and near-term plants will be assessed.

It has also become clear that, as plants age, comprehensive reliability assurance programs must be developed and implemented by licensees in order to maintain plant safety at acceptable levels and thereby prevent plants from becoming risk outliers. In FY 1986, RES will complete its current research involving trial applications at several nuclear power plants. Based on the results obtained, RES will make recommendations for implementing, in FY 1987, a full scale demonstration at one plant and will continue to develop an independent NRC capability to assess licensees' reliability assurance programs. This capability will be increasingly used in the future to identify incipient safety problems, maintain plant safety, and evaluate the safety impacts of proposed temporary or permanent changes in regulatory requirements for operating nuclear power plants.

SEVERE ACCIDENT RISK

RES has directed its FY 1985 and FY 1986 severe accident risk assessment programs to the preparation of an integrated reactor risk assessment report, NUREG-1150, that would assemble and interpret the most recent information on accident frequencies and fission product behavior during severe reactor accidents. This report, scheduled for completion in FY 1986, will provide, for public comment, a risk perspective on six reference reactor plants representing the major containment types. These plants were selected as being typical of the approximately 100 licensed and near-term reactors. When completed, these risk perspectives will be used as a basis for developing methodology to apply risk-based techniques to plants without PRAs as part of NRR's implementation of severe accident policy and to assess the risk importance of existing and proposed regulatory requirements. For example, it will be used to reassess the NRC's emergency planning and siting regulations. The plant modeling and data developed will also be used in FY 1987 and beyond to develop user-friendly, interactive computer models that will facilitate the use of this information in analysis of generic and plant-specific regulatory requirements and evaluation of operating events.

MANAGEMENT OF RULEMAKING

The management of agency rulemaking requires all ongoing agency rulemaking to be independently reviewed by the Office of Nuclear Regulatory Research to ensure that:

1. NRC rulemaking resources are focused on issues important to public safety and common defense and security,

Nuclear Regulatory Research Programs - Continued

2. All ongoing rulemakings are coordinated and consistent with agency policy,

3. Necessary rulemakings are properly developed and documented and are completed in a timely manner, and

4. Unnecessary rulemakings are weeded out before substantial staff time and resources are spent on them.

Initial efforts have been focused on purging ongoing rulemakings of marginal safety significance from the NRC Regulatory Agenda. Over 80 rulemakings have been independently reviewed to date; and, as a result, 16 rulemakings have been terminated.

In addition during FY 1987 RES will continuing its program to reevaluate the effectiveness of existing regulatory requirements utilizing probabilistic risk assessment techniques as one tool in the evaluation. The objective of this continuing program is to identify those requirements that are clearly not effective in enhancing public health and safety and should therefore be revised or withdrawn. Such a program would permit limited agency resources to be focused more on matters of highest safety significance. In FY 1985, this program provided a general screening of 10 CFR Part 50 (Domestic licensing of production and utilization facilities) which identified candidate regulatory requirements which appeared to have marginal importance to risk. In FY 1986 and FY 1987 more detailed analyses will be performed on approximately ten regulatory requirements which may support possible future regulatory actions.

WASTE MANAGEMENT, EARTH SCIENCES AND HEALTH PROGRAM

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$13,626	$12,410	$11,740
(Staff)	(49)	(42)	(35)

This decision unit includes the NRC research and standards development work done in the areas of high-level and low-level radioactive waste management, the earth sciences, radiation protection, and radiation health effects. The work on high-level waste (HLW) contributes to the technical basis for regulations and licensing decisions to enable the NRC to evaluate DOE submittals and ultimately license HLW disposal facilities. Similarly, the work on low-level waste (LLW) is developing corresponding information for LLW facilities covering conventional and alternative disposal methods to facilitate licensing by Agreement States as well as the NRC. Work in the earth sciences is primarily aimed at improving the NRC's understanding of the likelihood and extent of serious damage to nuclear power plants from natural causes (earthquakes, tornadoes, floods). The objectives of the work on radiation protection and health effects are to improve protection for workers against radiation exposure, to better understand the effects of radiation on humans, and to improve radiation measurements and control methods.

HIGH-LEVEL WASTE

In response to the Nuclear Waste Policy Act of 1982, the NRC is developing the capability for evaluating independently and on a continuing basis the adequacy of programs and information being developed by the Department of Energy for the licensed disposal of high-level waste in geologic repositories. The NRC HLW research and standards development program has contributed to the technical basis for this independent evaluation consistent with the milestones for repository development set forth in DOE's draft project decision schedule. If these schedules are to be met for this first-of-a-kind undertaking, it is essential that the NRC have a competent methodology for evaluating the adequacy of DOE submissions as DOE proceeds to develop its plans and conducts its activities related to site screening, selection, and characterization and facility design. Specifically, NRC's HLW research is providing on-going support to NRC's prelicensing consultation with the DOE in order to provide timely guidance to DOE on technical points and issues to be addressed during site characterization, and is developing information specific to NRC's review of DOE's site characterization plans.

At present, the technical basis for NRC's HLW management review capability contains large uncertainties due to the lack of any previous experience with HLW disposal and the very long periods of time involved. In FY 1987, uncertainties will be reduced in selected areas for repositories in tuff and salt through a program of selective experimentation and testing of performance assessment models for the various components of a HLW repository. RES will also continue the research needed to support the day-to-day activities of the licensing office by identifying critical regulatory issues and helping to ensure that technical problems associated with these issues are understood sufficiently to support licensing decisions.

More specifically, FY 1987 efforts will address waste package performance, performance of key features of an underground facility in tuff and salt such as borehole and shaft seals and performance of backfill and packing materials, the groundwater hydrology in and around the repository, radionuclide transport, and performance assessment methodologies.

LOW-LEVEL WASTE

NRC LLW research and standards development is directed at supporting the NRC licensing staff and the States in the regulation of low-level waste disposal. Safety evaluation of engineered enhancements and alternatives to presently used shallow land burial for storage or disposal of LLW will be an important feature of both NRC and State activities in FY 1987. NRC LLW research is critical to establishing a sound technical basis for regulation of and advice to the States on all aspects of LLW disposal, including engineered enhancement and alternatives to shallow land burial. This research effort will maintain both a national safety perspective and a uniform technical basis for efforts by the States to safely dispose of low-level waste. It will also provide the technical basis for implementing requirements of the recent legislation amending the LLW Policy Act.

Specific efforts to be continued or planned for FY 1987 include research to provide information relative to site suitability, facility design, LLW waste form and packaging performance, operational monitoring and postoperational care, and the performance of low-level waste disposal facilities over long periods of time. A key element of the FY 1987 research will be obtaining validation of performance assessment models and computer programs. Such validation is needed to increase confidence in the management of LLW, to minimize the need to apply conservatisms in the regulation of LLW disposal to compensate for uncertainties in the performance of various LLW disposal techniques, and to provide the technical bases against which to evaluate the performance of engineered enhancements or alternatives to conventional shallow land burial. This will allow licensors to give appropriate consideration for the presence of engineered systems, and to minimize licensing delays.

EARTH SCIENCES

Earth Sciences research and standards development encompasses seismology, geology and geotechnical engineering, and the hazards that natural phenomena present to licensed facilities.

During FY 1987, research will continue to better determine the seismic hazards (earthquake magnitude and occurrence intervals) for power plant sites and to predict the response of the site and the plant to earthquakes within the range of magnitudes appropriate to the site, especially for the Central and Eastern United States. This program is closely coordinated with and provides input to the seismic program evaluating reactor design requirements. For some of the older nuclear power plants, it is likely that reevaluation using present knowledge of geology and seismicity could lead to substantially increased values for seismic loads. Uncertainties in the data contribute to difficulties in assessing whether the present seismic safety margins continue to provide adequate protection of the public health and safety. Therefore, the primary objective of the earth sciences research program is to obtain the improved understanding needed to reevaluate the ground accelerations used in establishing these safety margins and to revise Appendix A (Seismic and geological siting criteria for nuclear power plants) to 10 CFR Part 100 appropriately for plants in the Central and Eastern U.S. To accomplish this, the NRC has been funding the operation of seismographic networks in the Central and Eastern U.S. and related geological and geophysical research in the seismically active locations. Research results defining Central and Eastern seismic hazards have been used in license reviews and will be needed to determine whether seismic margin assessments of licensed plants are advisable.

HEALTH EFFECTS AND RADIATION PROTECTION

This program is intended to provide technical information to NRR, IE and NMSS on the health effects of exposure to radiation and standards for public and occupational radiation protection. During FY 1987 radiation protection efforts will include work towards the final version of the general revision of 10 CFR Part 20 (Standards for protection against radiation), guidance on acceptable ways of complying with this new radiation protection regulation and the development of other radiation protection standards needed by the agency and its licensees.

MANAGEMENT DIRECTION AND SUPPORT

	FY 1985 Estimate	FY 1986 Estimate	FY 1987 Estimate
Funds	0	0	0
(Staff)	(24)	(22)	(20)

The staffing requirements for this area consist of the Director's Office, administrative support staff, and the resource control and contract execution staff. The staff provides the Director of Nuclear Regulatory Research with assistance and support in the direction and evaluation of complex technical research projects and program plans, and coordinates, directs, and executes the business matters of the Office, including contractual agreements, budget formulation, fiscal management, personnel administration, long-range research planning, management information systems and travel assistance. Among the staff's most important functions are coordination with the licensing and regulatory groups within NRC to identify their needs and to assure that the research program is responsive to the maximum extent practicable, and coordination with industry and foreign agencies to develop and execute multiparty agreements on safety research.

This page intentionally left blank

PROGRAM TECHNICAL SUPPORT

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations..............................$30,525

Total Funds and Staff

	FY 1985 Actual	FY 1986[1] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 18,910	$ 18,270	$ 17,250
Program Support	5,140	5,080	6,550
Administrative Support	5,656	5,860	5,720
Travel	1,049	1,080	1,005
Total Obligations	$ 30,755	$ 30,290	$ 30,525
(Staff)	(365)	(355)	(330)

Program Support Funds and Staff

The Program Technical Support program provides direct technical support to agency programs. At headquarters this Program is supported by the Advisory Committee on Reactor Safeguards (ACRS), the Atomic Safety and Licensing Board Panel (ASLBP), the Atomic Safety and Licensing Appeal Panel (ASLAP), the Office of International Programs (OIP), and the Office for Analysis and Evaluation of Operational Data (AEOD). Technical support is provided at both headquarters and the regions by the Office of Investigations (OI), the Office of State Programs (SP) and the Office of the Executive Legal Director (ELD). The allocation of program support funds and staff to each office follows with narrative describing the programs and their needs.

	FY 1985 Actual		FY 1986[1] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
ACRS	$ 285	54	$ 250	50	$ 320	42
ASLBP	608	51	822	48	820	38
ASLAP	3	16	10	15	10	14
OI	0	38	0	44	0	44
ELD	74	102	60	96	60	91
OIP	53	29	10	27	50	25
SP	722	35	695	33	700	32
AEOD	3,395	40	3,233	42	4,590	44
TOTALS	$5,140	365	$5,080	355	$6,550	330

---

[1] Estimates do not reflect the 4.3% reduction required the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 285	$ 250	$ 320
(Staff)	(54)	(50)	(42)

The Advisory Committee on Reactor Safeguards (ACRS), established in 1957 by statute, advises the Commission on potential hazards of proposed or existing reactor facilities and the adequacy of proposed safety standards. Section 29 of the Atomic Energy Act of 1954 also requires that the ACRS advise the Commission with respect to the safety of operating reactors, and perform other duties as the Commission may request. Public Law 95-209 requires the ACRS to provide an annual report to the Congress on the NRC Safety Research Program.

The ACRS reviews requests for preapplication site and standard plant approvals; applications for operating licenses for production and utilization facilities; amendments to operating licenses for power reactors, test reactors, spent fuel reprocessing plants and waste disposal facilities; and assists in matters related to nuclear facilities as outlined in a Memorandum of Understanding with the Department of Energy. The staffing changes reflect a reduced reactor licensing caseload.

The ACRS also recommends and comments on proposed regulatory guides and standards being considered and/or promulgated as the basis for NRC regulatory activities. Since the implementation of the Nuclear Waste Policy Act of 1982, the ACRS has been requested by the NRC to participate in the establishment of related standards and licensing activities on the handling and disposal of radioactive waste, including the interim storage arrangements for this material.

ATOMIC SAFETY AND LICENSING BOARD PANEL

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 608	$ 822	$ 820
(Staff)	(51)	(48)	(38)

The Atomic Safety and Licensing Board Panel (ASLBP) is the statutory adjudicatory office of the agency. Administrative Judges sitting alone and in three-member Boards conduct adjudicatory hearings pursuant to the Administrative Procedure Act, the Atomic Energy Act and the National Environmental Policy Act. Boards hear and decide issues granting, suspending, revoking or amending licenses to construct and operate nuclear power plants and other nuclear facilities. Hearings address matters such as health, safety, environment, and economic issues. Single Administrative Law Judges decide cases in enforcement, civil penalties and antitrust. Currently the workload includes a decreasing caseload of applications by utilities for nuclear power plant operating licenses offset by an increasing number of license amendments and other proceedings which the Commission may direct or the regulations of the agency may require.

ATOMIC SAFETY AND LICENSING APPEAL PANEL

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3	$ 10	$ 10
(Staff)	(16)	(15)	(14)

The Atomic Safety and Licensing Appeal Panel's three-member tribunals review decisions of administrative law judges and the Atomic Safety and Licensing Boards rendered in (1) proceedings on applications under 10 CFR Part 50; and (2) such other licensing proceedings as the Commission may specify. In discharging this review function, the Panel is governed by the applicable provisions of the Administrative Procedure Act and the agency's

Rules of Practice. The staffing changes reflect a reduced reactor licensing caseload.

OFFICE OF INVESTIGATIONS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(38)	(44)	(44)

The Office of Investigations is an independent office which conducts and supervises agency investigations of all allegations of wrongdoing by other than NRC employees and contractors, including reactor licensees, fuel cycle licensees, and materials safety and safeguards and facilities licensees. As operating licenses are issued and the number of applications decreases, the complexion of OI cases is changing. The cases necessarily are becoming more complex because they relate to operating reactors rather than construction. Each case must be thoroughly and completely examined and subsequent findings must be evaluated and disseminated so as to assure prompt attention to safety concerns. All subsequent findings must be evaluated and disseminated so as to avoid undue delay to licensing activities. Quality control standards are being developed, administered, and maintained to oversee the conduct of investigations. Staffing levels reflect the emphasis away from planning to operation. The Commission and appropriate agency offices are apprised of matters under investigation which may affect public health and safety or other aspects of the agency's mission. The Office of Investigations maintains liaison with other agencies and organizations to ensure the timely exchange of information of mutual interest and makes appropriate referrals to the Department of Justice on criminal matters.

OFFICE OF THE EXECUTIVE LEGAL DIRECTOR

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 74	$ 60	$ 60
(Staff)	(102)	(96)	(91)

The staff of the Office of the Executive Legal Director provides legal advice and services to the Executive Director for Operations and the offices which report to that official. They provide legal representation and legal advice to the NRC staff in administrative proceedings involving the licensing of nuclear facilities and materials, enforcement actions, and rulemaking. Specifically, assistance is provided in the areas of health and safety; environmental impact and antitrust aspects of licensing and regulation; research programs; general agency administration, including contracts, patents, personnel, security and labor regulations; safeguards and waste management programs; and the export/import licensing program. Staff levels reflect a reduced reactor licensing caseload.

OFFICE OF INTERNATIONAL PROGRAMS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 53	$ 10	$ 50
(Staff)	(29)	(27)	(25)

The Office of International Programs was established to develop and direct a program of cooperation with foreign regulatory agencies and to administer the Commission's responsibilities in the areas of nonproliferation, international safeguards and nuclear exports and imports. This Office provides informational support to the Commission and staff on international matters, maintains liaison with other agencies, and performs a key function in facilitating the flow of nuclear health and safety related information between the United States and foreign countries.

It also administers the Commission's export/import licensing procedures, assists in the development of improved international safeguards and physical security arrangements and participates in the ongoing implementation of the Commission's regulations in support of the U.S./International Atomic Energy Agency (IAEA) safeguards agreement.

OFFICE OF STATE PROGRAMS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 722	$ 695	$ 700
(Staff)	(35)	(33)	(32)

The Office of State Programs manages a program of cooperation and liaison with States, local governments, Indian tribes and interstate organizations. The office coordinates regulatory issues with states concerning high-level waste (under the Nuclear Waste Policy Act), low-level waste (under the Low-Level Radioactive Waste Policy Act), and transportation of radioactive materials. It also administers NRC's program with 28 Agreement States, which in turn administer about 13,000 licenses involving the regulation of certain classes of radioactive materials, including uranium milling and low-level radioactive waste disposal.

The office also administers the Price-Anderson Act, which provides liability insurance and government indemnity for nuclear accidents, and administers activities relating to nuclear property insurance, financing decommissioning, tracking state regulatory incentives for nuclear plants, and monitoring of TMI-2 cleanup financing. It provides guidance, training and assistance to State and local governments in radiation control and coordinates with other NRC offices and agencies having State and interstate responsibilities.

The Office also supports, along with States and other agencies, the Conference of Radiation Control Program Directors, Inc. (an association of State Radiation Control Program Directors).

OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 3,395	$ 3,233	$ 4,590
(Staff)	(40)	(42)	(44)

The Office for Analysis and Evaluation of Operational Data collects, analyzes, and disseminates information about operating experience from all agency licensed activities. This Office reviews operating experience to identify significant events or situations that warrant detailed evaluation and then studies those significant events or situations to determine the lessons of experience and safety concerns that warrant regulatory attention.

Specific tasks and activities of the Office are the following:

- Collect, screen, analyze, and feed back operating experience to agency staff, the nuclear industry, and the public on all agency licensed activities.

- Screen U.S. and foreign operational events for significance and systematically and independently analyze those events.

- Analyze operational experience data to identify trends and patterns that indicate potential safety problems.

- Make recommendations for agency action for resolution of safety issues detected through these activities.

- Analyze all licensee event reports, recommend to the Commission which events constitute abnormal occurrence and document those occurrences on a quarterly basis to Congress and the public.

- Maintain operational data storage and retrieval systems, including: (1) development and operation of several data bases of selected operational experience data, and (2) coordination with the Institute of Nuclear Power Operations (a nuclear-industry-funded organization) which supports and manages the Nuclear Plant Reliability Data System.

- Report appropriate U.S. events to the International Nuclear Energy Agency's incident reporting system.

Program Technical Support - Continued

- Serve as contact point for data collection in relation to the agency staff, the Advisory Committee on Reactor Safeguards, and industry groups.

- Administer the Incident Investigation Program for significant operational events, including the development of agency guidance, personnel rosters, and training programs, and provide the necessary support to the Incident Investigation Teams (IITs).

The screening work requires the review of 3,000 reactor Licensee Event Reports per year, as well as the review of extensive documentation of events involving foreign reactors, inspection reports, and U.S. industry reports. In the evaluation of nonreactor events associated with the use, transportation, safeguarding and disposal of nuclear materials, about 6,000 reports are reviewed each year that are received from approximately 8,300 licensees. These reports involve operational events such as overexposures to radioactive materials, spills, or medical misadministrations. In addition, the reports of 8,000 Agreement State licensees are reported to the agency semiannually by the Agreement States.

The improved data bases associated with this activity are now sizeable and collection mechanisms are in place. It is now incumbent on the NRC to analyze trends and patterns based on these data. The lessons of operating experience often cannot be derived from viewing a single event; they must be developed by associating events. Through trends and patterns an evolving picture can be developed that can lead to appropriate corrective actions being identified and taken before the situation becomes a serious incident. It is toward this end that the data bases have been established. The analyses that are now possible to identify the trends and patterns and to integrate the risk perspective into the analyses require the additional staff requested. Staff increases in FY 1987 are to provide increased trends and patterns analyses and human factors analysis capability.

This page intentionally left blank

PROGRAM DIRECTION AND ADMINISTRATION

(Dollars are in thousands, except in text, where whole dollars are used; staff numbers are in full-time equivalents.)

Total FY 1987 estimated obligations..................................$43,115

Program Total Funds and Staff

	FY 1985 Actual	FY 1986[1] Estimate	FY 1987 Estimate
Salaries and Benefits	$ 30,700	$ 29,800	$ 29,480
Program Support	1,951	1,875	1,800
Administrative Support	10,374	11,097	11,290
Travel	545	570	545
Total Obligations	$ 43,570	$ 43,342	$ 43,115
(Staff)	(729)	(703)	(681)

Program Support Funds and Staff

The Program Direction and Administration program collectively provides overall policy direction, resource management, administration and logistic support for the agency. The staff offices are the Commission (OCM), Secretary (SECY), Inspector and Auditor (OIA), General Counsel (OGC), Public Affairs (OPA), Policy Evaluation (OPE), Congressional Affairs (OCA), Executive Director for Operations (EDO), Small and Disadvantaged Business Utilization and Civil Rights (SBDU/CR), Resource Management (RM), and Administration (ADM). The allocation of program support funds and staff to each office follows with narrative describing the programs and their needs.

	FY 1985 Actual		FY 1986[1] Estimate		FY 1987 Estimate	
	Funds	Staff	Funds	Staff	Funds	Staff
OCM	$ 0	34	$ 40	36	$ 100	36
SECY	325	30	230	31	350	30
OIA	0	27	0	26	0	26
OGC	6	29	22	31	29	30
OPA	11	17	10	18	10	17
OPE	0	18	25	17	60	14
OCA	0	10	1	9	1	8
EDO	0	23	50	21	50	20
SDBU/CR	51	9	375	8	150	7
RM	1,558	133	1,122	127	1,050	124
ADM	0	399	0	379	0	369
TOTALS	$1,951	729	$1,875	703	$1,800	681

[1] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

THE COMMISSIONERS AND STAFF

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 40	$ 100
(Staff)	(34)	(36)	(36)

The Office of the Commissioners is the governing body which must exercise the overall NRC responsibilities. This body provides fundamental policy guidance to assure that the civilian use of nuclear energy is regulated in a manner consistent with the public health and safety, environmental quality, national security and antitrust laws.

OFFICE OF THE SECRETARY

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 325	$ 230	$ 350
(Staff)	(30)	(31)	(30)

The Office of the Secretary provides general management services to support the Commission and to implement Commission decisions; advises and assists the Commission and staff on the planning, scheduling and conduct of Commission business; prepares for and records Commission meetings; manages the Commission staff paper system and monitors the status of all items requiring action; integrates automated data processing and office automation initiatives into the Commission's administrative system; maintains a forecast of matters for future Commission consideration; processes and controls Commission correspondence; maintains the Commission's official records; maintains the official Commission adjudicatory and rulemaking dockets, and serves Commission issuances in all adjudicatory matters and public proceedings; administers the NRC historical program; and directs and administers agency's NRC Public Document Room.

Program Direction and Administration - Continued

Program support funds provide verbatim transcription services for Commission meetings.

OFFICE OF INSPECTOR AND AUDITOR

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(27)	(26)	(26)

The Office of Inspector and Auditor functions as the agency Inspector General, providing the Commission with an independent review and appraisal of programs and operations. The office is responsible for developing policies and standards that govern the financial and management audit program; planning, directing and executing the long-range, comprehensive audit program; conducting and reporting on investigations and inspections, as necessary, to ascertain and verify the facts with regard to the integrity of internal agency operations, employees, contractors, organization's programs and activities; and referring suspected or alleged criminal violations concerning NRC employees or contractors to the Department of Justice.

It also administers the Commission's "open door" policy; serves as point of contact with the General Accounting Office (GAO); and maintains liaison with GAO and Government audit and law enforcement agencies.

OFFICE OF GENERAL COUNSEL

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 6	$ 22	$ 29
(Staff)	(29)	(31)	(30)

The Office of General Counsel is the Commission's chief legal advisor and provides legal advice on all issues considered by the

Commission, including the discharge of its quasi-judicial responsibilities, rulemaking, and the development of substantive policy matters. The OGC staff represent the Commission in Courts of Appeal proceedings to review Commission orders and rules, and in cooperation with the Department of Justice, represent the Commission in court proceedings affecting the agency program in the Federal District Courts and Supreme Court. OGC's Federal Court litigation caseload has increased substantially and is expected to continue to increase.

The office also provides legal advice on legislative matters of concern to the agency, including drafting of legislation, preparation and review of testimony, and preparation and transmission of statements of views on proposed legislation.

Substantial resources are also being devoted to implementation of the Freedom of Information Act. In addition, the Commission has reserved for itself the determination whether Licensing Board decisions authorizing full power operation should be made immediately effective. Each of the immediate effectiveness reviews requires substantial effort, particularly in contested cases. The staff also provides legal advice to the Office of Investigations, including attorneys to participate in certain major field investigations.

OFFICE OF PUBLIC AFFAIRS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 11	$ 10	$ 10
(Staff)	(17)	(18)	(17)

The Office of Public Affairs issues public announcements from both headquarters and the regional offices; responds to telephone inquiries from the news media and the public; and responds to letters from the media and the public, including the bulk of the NRC referrals from the White House. In addition, the staff arranges press conferences in the Washington area, as well as in the regions in the vicinity of nuclear facilities, and coordinates requests for Commission speakers before civic groups and other organizations interested in the role of the agency.

Program Direction and Administration - Continued

The office also assists the licensing boards, the appeal boards and the Advisory Committee on Reactor Safeguards whenever hearings and meetings are held in which a high degree of public and press interest is evidenced; advises the Commission and senior staff on public affairs impacts of planned programs and other activities; and advises and assists the Commission and the public on the conduct of public meetings and rulemaking hearings of broad general interest.

OFFICE OF POLICY EVALUATION

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 25	$ 60
(Staff)	(18)	(17)	(14)

The Office of Policy Evaluation advises the Commission on a broad range of substantive policy matters to enhance the information base on which Commission decisions are made. The Office provides the Commission with an independent evaluation of program policy objectives; reviews staff papers; and provides independent technical evaluation of issues presented to the Commission, including cases under adjudication. Use of outside consultants is anticipated for the development of the Five Year Plan and other matters directed by the Commission.

OFFICE OF CONGRESSIONAL AFFAIRS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 1	$ 1
(Staff)	(10)	(9)	(8)

The Office of Congressional Affairs assists and advises the Commission and senior staff on Congressional matters, coordinates agency Congressional relations activities and is the principal liaison for the Commission with Congressional committees and members of Congress.

The primary objective is to assure that the Congress, through its designated oversight committees, is kept fully and currently informed of agency activities and that Congressional requests and inquiries are responded to promptly. The Office provides the Commission and senior NRC staff with relevant and current information as to major legislative activities likely to affect the agency. Additionally, the office seeks to assure that individual members of Congress are kept currently and adequately informed of significant NRC licensing activities that impact their respective states and districts.

OFFICE OF THE EXECUTIVE DIRECTOR FOR OPERATIONS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 50	$ 50
(Staff)	(23)	(21)	(20)

The Office of the Executive Director for Operations supervises and coordinates operational activities and policy development of both line and staff offices and implements the Commission's policy directives pertaining to these offices.

OFFICE OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION AND CIVIL RIGHTS

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 51	$ 375	$ 150
(Staff)	(9)	(8)	(7)

The Office of Small and Disadvantaged Business Utilization/ Civil Rights is responsible for implementing and executing functions and duties under three (3) program authorities:

Small and Disadvantaged Business Utilization Program - P.L. 95-507, Section 8 and 15 of the Small Business Act of 1958, as amended. This function required: the location of small businesses capable of performing NRC contractual requirements; the conduct of outreach efforts designed to stimulate greater small business interest in NRC programs; and the dissemination of information to small businesses interested in Agency contracting procedures.

Civil Rights Program - Civil Rights Act of 1964, as amended, implemented by 29 CFR Part 1613 of the EEOC regulations. This function requires: obtaining and maintaining equal opportunity within the NRC; developing and preparing the Agency's Affirmative Action Plan; advising and assisting in recruitment plans and activities; providing counseling and investigations of discrimination complaints; providing EEO training for all Agency employees; coordinating activities associated with all Agency civil rights matters; interacting with community groups concerned with equal opportunity and human rights in the workplace; and implementing the Agency's Federal Financial Assistance Program, under Section 174 of the Atomic Act of 1954, as amended.

Federal Women's Program - This function aims to expand and enhance opportunities for NRC women employees, and to reform policies and practices which serve as barriers; identifies underrepresentation and underutilization of women in the workforce, and recommend corrective action; participates in internal personnel management evaluation and recruitment actions; and maintains communication between women's organizations and Agency management.

OFFICE OF RESOURCE MANAGEMENT

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 1,558	$ 1,122	$ 1,050
(Staff)	(133)	(127)	(124)

The Office of Resource Management provides budgetary and fiscal management for the agency, including the development and maintenance of a financial control system and a system of accounting designed to conform to the standards prescribed by the Comptroller General; management information and analyses for a variety of users within the agency; and is the office responsible for developing and maintaining the agency's principal management information systems and centralized automatic data and wordprocessing.

It provides analyses to assess the relationship between program workload and resource allocation; is the agency focal point for cost analyses; collects, reviews and issues various periodic and special reports on nuclear power plant data reported by licensees for use by agency offices, Congress, other parts of the government and the public at large; and manages and coordinates special projects, including Congressionally mandated reports, such as the agency's Annual Report.

The Office has the following functions:

BUDGET AND ANALYSIS

This work consists of developing and maintaining policies and procedures and performing the operations needed for formulating and obtaining approval for agency budgets; developing and administering agency authorization and appropriation funding legislation, and presenting budget estimates and information to agency management, the Office of Management and Budget, and Congress; designing and developing systems and criteria for resource planning; validating staff resource requirements (people and funds) and utilization; developing regulatory cost analyses; and maintaining liaison with the Office of Management and Budget and Congress.

ACCOUNTING AND FINANCE

The agency's financial management responsibilities are carried out by developing and applying policies, principles, standards, and procedures for financial and cost accounting and reporting systems; maintaining accounting and internal controls over agency appropriations; maintaining centralized payroll and travel accounting and reporting functions; maintaining centralized governmental and commercial contractor accounting and reporting; developing and maintaining the agency's financial management information systems; maintaining liaison with the General Accounting Office, the Treasury Department, and other agencies on financial procedures and related matters; and developing policies, standards, and practices governing cost principles and other financial arrangements under agency contracts and participating in contractor selections and negotiations.

AUTOMATED INFORMATION SERVICES

The agency's automated data and word processing functions, including the procurement of equipment and software, provide support throughout the agency in developing automated systems, applications, policies and procedures, quality assurance and oversight responsibility. Management is also provided for interagency and contractor computer time-sharing contracts and coordination of automatic data processing activities with other Federal agencies.

OFFICE OF ADMINISTRATION

	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Funds	$ 0	$ 0	$ 0
(Staff)	(399)	(379)	(369)

The Office of Administration provides the administrative and logistical support services for headquarters and some services for the regional offices. The services provided to all segments of the agency include: administration of the NRC Personnel Management Program which includes recruitment and staffing, position classification and evaluation, labor relations, organization and management analysis and managing the Cooperative Education Program; contracting and purchasing activities for the agency; transportation and travel services; agency telecommunications services, including facsimile, radio, teletype, telephone, data transmission and the Emergency Notification System; space acquisition and utilization including planning for consolidation of space into fewer buildings; providing for the security of facilities and safeguarding of classified and sensitive unclassified documents; technical information management and document control services for the agency; administration of the Freedom of Information Act and Privacy Act activities; and administration of a system of 112 local public document rooms throughout the United States.

It also provides printing and reproduction services for the agency; management of the headquarters administrative support funds; administration of the Facilities and Materials License Fee Program; Management Development and Training Support; direction of the Occupational Health and Safety Program; and other agency-wide services, such as interviewee and change-of-station travel and the Agency's Alcohol and Drug Abuse Program.

The Office has the following functions:

ORGANIZATION AND PERSONNEL

Programs for personnel management and organization activities, include staffing and placement services, recruitment, position classification and evaluation, personnel policy and program development, Federal labor relations and employee relations services, organization and staffing analyses, management analyses, and the agency's position management program; and provides secretarial services, liaison, and support to the Executive Resources Board and its subgroups.

FACILITIES AND OPERATIONS SUPPORT

This function develops and administers the agency telecommunications activities; represents the agency in liaison with Federal and State agencies on telecommunications matters; provides mail and messenger services; issues and processes travel authorization requests; develops and administers programs for space acquisition and utilization, motor vehicle operation, building management, and transportation services; and develops and administers programs for property management, supply and warehouse operations, and office and equipment moves.

TECHNICAL INFORMATION AND DOCUMENT CONTROL

This function provides centralized agencywide publication control and processing, technical writing and editing service, and translation service; publishes agency books, regulatory and technical reports, pamphlets and periodicals; provides direction and coordination for agencywide provision of document composition, printing, graphics, photography, and audiovisual and related services; provides agencywide service for receipt, dissemination, storage and retrieval of agency publications; and provides for paperwork management under the Paperwork Reduction Act, the Federal Records Act, and related Federal statutes.

It maintains centralized, official reactor licensing records, classified documents, and accountability records; acquires and maintains library collections to support official agency actions; and provides automated reports processing and proofreading service agencywide, including, electronic communication with the regional offices and contractors.

RULES AND RECORDS

This function develops policies, procedures and rules for implementing the Freedom of Information Act, Privacy Act, and the Regulatory Flexibility Act; develops and reviews amendments to agency regulations and petitions for rulemaking; provides advice and assistance to offices and the public regarding regulations and procedures for filing petitions for rulemaking; and directs and coordinates Local Public Document Room activities near reactor sites throughout the United States.

CONTRACTS

This function develops and implements agencywide contracting and financial assistance policies and procedures; and directs and coordinates contracting and financial assistance activities, including selection, negotiation, administration and closeout of contracts. It provides advice and assistance to program officials on procurement regulations and requirements and methods of meeting program objectives consistent with such requirements; executes and modifies contracts, financial assistance relationships and interagency actions; settles claims and terminations; and performs other normal duties of a contracting office specified in the Federal Acquisition Regulations.

SECURITY

This function administers the agency's overall security program, including the safeguarding of Restricted Data and National Security Information documents or material (e.g., classified matter) at Headquarters facilities, Regional Offices, contractor, licensee and other plants containing such matter; the safeguarding of sensitive intelligence; and physical protection at NRC Headquarters, Regional Offices, and other agency locations; and the processing and maintenance of access authorizations (clearances) for agency employees, consultants, contractors, and others.

LICENSE FEE MANAGEMENT

This function administers the agency's license fee program whereby applicants for licenses are assessed the cost of reviewing and approving the licenses; develops policies and procedures for cost recovery and fees for Commission consideration; prepares fee regulations, fee schedules, and procedures; periodically reviews schedules for updating and modification; and, annually analyzes agency licensing costs for determining fee bases.

It also institutes enforcement procedures when appropriate to assure fee payments; and works with other Government agencies to provide consistency in fee programs.

MANAGEMENT DEVELOPMENT AND TRAINING

This function plans and develops policies and programs for the training and development of agency executives and Senior Executive Service candidates; provides management and supervisory training and development programs to improve managerial performance; administers the Intern and Upward Mobility programs; and develops training and education programs in response to Commission, statutory, and interagency requirements.

It also assists in identifying training needs and programs; develops and administers the agencywide training budget (excluding the Reactor Training Center programs); and provides career development counseling.

OCCUPATIONAL SAFETY AND HEALTH

This function administers the agencywide occupational health and safety program to provide a safe working environment for employees and the public using agency facilities.

LEGISLATIVE PROGRAM PROJECTIONS

(Dollars in Millions)

	Actual	Estimate					
	FY 1985	FY 1986[1]	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991
NRC Total Budget Authority	$448	$418	$405	$405	$405	$405	$405
Budget Outlays	$468	$442	$418	$406	$405	$405	$405

[1] Estimates for FY 1986 through FY 1991 do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction in FY 1986 is $17,974,000.

Consulting Services[1]

Account Title	Type	Obligations		
		FY 1985	FY 1986[2]	FY 1987
Nuclear Reactor Regulation	Contractual Services	$ 50	$ 50	$ 40
	Personnel Appts.	68	75	75
	Advisory Committee Consultants	0	0	0
	Total	$118	$125	$115
Nuclear Material Safety and Safeguards	Contractual Services	$ 0	$ 0	$ 0
	Personnel Appts.	45	45	45
	Advisory Committee Consultants	29	33	33
	Total	$ 74	$ 78	$ 78
Inspection and Enforcement	Contractual Services	$ 0	$ 0	$ 0
	Personnel Appts.	0	0	0
	Advisory Committee Consultants	0	0	0
	Total	$ 0	$ 0	$ 0
Nuclear Regulatory Research	Contractual Services	$ 0	$ 0	$ 0
	Personnel Appts.	0	0	0
	Advisory Committee Consultants	0	0	0
	Total	$ 0	$ 0	$ 0
Program Technical Support	Contractual Services	$ 0	$ 0	$ 0
	Personnel Appts.	0	0	0
	Advisory Committee Consultants	93	130	130
	Total	$ 93	$130	$130
Program Direction and Administration	Contractual Services	$ 0	$ 0	$ 0
	Personnel Appts.	100	100	100
	Advisory Committee Consultants	0	0	0
	Total	$100	$100	$100
Total Nuclear Regulatory Commission	Contractual Services	$ 50	$ 50	$ 40
	Personnel Appts.	213	220	220
	Advisory Committee Consultants	122	163	163
	Total	$385	$433	$423

---

[1] Dollars are in thousands, except in text, where whole dollars are used.

[2] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

MAJOR PROGRAM AREAS

NUCLEAR REACTOR REGULATION

Consulting services are used to obtain advice/opinions on highly complex and controversial areas on an intermittent basis to enhance the quality and diversity of views and to provide outside independent viewpoints that lend greater credibility and technical support to agency licensing positions. Personnel appointments provide engineering and scientific expertise not otherwise available to NRR.

NUCLEAR MATERIAL SAFETY & SAFEGUARDS

Consulting services are used to provide (1) technical advice on fuel processing operations, including high-level waste solidification activities; (2) advice on review of critical technical data associated with repository site performance and evaluation; and (3) assistance to staff in evaluating low-level waste generation, processing and storage from the disposal perspective to ascertain long-term burial ground performance. Advisory Committee expenses include the Advisory Committee on Medical Uses of Isotopes which considers medical questions referred to it by NRC staff, renders expert opinion regarding medical uses of radioisotopes, and advises on matters of policy.

PROGRAM TECHNICAL SUPPORT

Consulting services will be used to perform a feasibility study to determine the advisability of using an automated litigation support system to support the hearing process. Advisory Committee consultants assist the membership of the Advisory Committee on Reactor Safeguards (ACRS), established by statute in 1957. The ACRS advises the Commission on potential hazards of proposed or existing reactor facilities and prepares a report to Congress as required by Public Law 95-209 on the NRC Safety Research Program. The consultants assist the Advisory Committee in conducting project reviews, OL reviews, generic reviews, and safety assessments. In addition, these consultants are required to assist the Committee on matters pertaining to high-level radioactive waste management.

PROGRAM DIRECTION & ADMINISTRATION

Personnel appointments provide the agency with advice and assistance (1) to the public concerning the retrieval and maintenance of documents in the Local Public Document Rooms; (2) in evaluating current and proposed automated document control systems, and in codes, standards, and reports collection; (3) on security clearance applications; and (4) to evaluate proposed revisions for security-related standards, procedures, rules, and regulations.

U.S. NUCLEAR REGULATORY COMMISSION
SUMMARY OF HEADQUARTERS-REGIONAL RESOURCES

(Dollars are in thousands; staff numbers are in full-time equivalents.)

	FY 1985 Actual		FY 1986 Estimate[1/]		FY 1987 Estimate	
	Dollars	(Staff)	Dollars	(Staff)	Dollars	(Staff)
Headquarters Programs						
Nuclear Reactor Regulation	$ 81,484	(633)	$ 78,620	(638)	$ 73,480	(589)
Nuclear Material Safety and Safeguards	35,907	(300)	37,225	(315)	35,700	(305)
Inspection and Enforcement	36,615	(236)	36,734	(245)	36,306	(233)
Nuclear Regulatory Research	149,959	(226)	134,710	(207)	113,460	(180)
Program Technical Support	29,604	(347)	29,170	(338)	29,385	(313)
Program Direction and Administration	43,570	(729)	43,342	(703)	43,115	(681)
Subtotal	$377,139	(2,471)	$359,801	(2,446)	$331,446	(2,301)
Regional Programs						
Nuclear Reactor Regulation	$ 5,037	(78)	$ 5,140	(78)	$ 6,360	(94)
Nuclear Material Safety and Safeguards	4,119	(62)	3,745	(55)	3,820	(55)
Inspection and Enforcement	57,971	(869)	61,506	(895)	62,234	(902)
Program Technical Support	1,151	(18)	1,120	(17)	1,140	(17)
Subtotal	$ 68,278	(1,027)	$ 71,511	(1,045)	$ 73,554	(1,068)
Total Programs						
Nuclear Reactor Regulation	$ 86,521	(711)	$ 83,760	(716)	$ 79,840	(683)
Nuclear Material Safety and Safeguards	40,026	(362)	40,970	(370)	39,520	(360)
Inspection and Enforcement	94,586	(1,105)	98,240	(1,140)	98,540	(1,135)
Nuclear Regulatory Research	149,959	(226)	134,710	(207)	113,460	(180)
Program Technical Support	30,755	(365)	30,290	(355)	30,525	(330)
Program Direction and Administration	43,570	(729)	43,342	(703)	43,115	(681)
TOTAL	$445,417	(3,498)	$431,312	(3,491)	$405,000	(3,369)

[1/] Estimates do not reflect the 4.3% reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985. The total NRC reduction is $17,974,000.

NRC FORM 335
(2-84)
NRCM 1102,
3201, 3202

U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET

SEE INSTRUCTIONS ON THE REVERSE

1. REPORT NUMBER (Assigned by TIDC, add Vol. No., if any)
NUREG-1100, Volume 2

2. TITLE AND SUBTITLE
Budget Estimates
Fiscal Year 1987

3. LEAVE BLANK

4. DATE REPORT COMPLETED
MONTH: January
YEAR: 1986

5. AUTHOR(S)

6. DATE REPORT ISSUED
MONTH: January
YEAR: 1986

7. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)
Division of Budget and Analysis
Office of Resource Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

8. PROJECT/TASK/WORK UNIT NUMBER

9. FIN OR GRANT NUMBER

10. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)
Division of Budget and Analysis
Office of Resource Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

11a. TYPE OF REPORT
FY 1987 Congressional Budget Submission

b. PERIOD COVERED (Inclusive dates)
10/1/86 - 9/30/87

12. SUPPLEMENTARY NOTES

13. ABSTRACT (200 words or less)

This report contains the fiscal year budget justifications to Congress. The budget estimates for salaries and expenses for fiscal year 1987 provide for obligations of $405,000,000 to be funded in total by a new appropriation.

14. DOCUMENT ANALYSIS - a. KEYWORDS/DESCRIPTORS

b. IDENTIFIERS/OPEN-ENDED TERMS

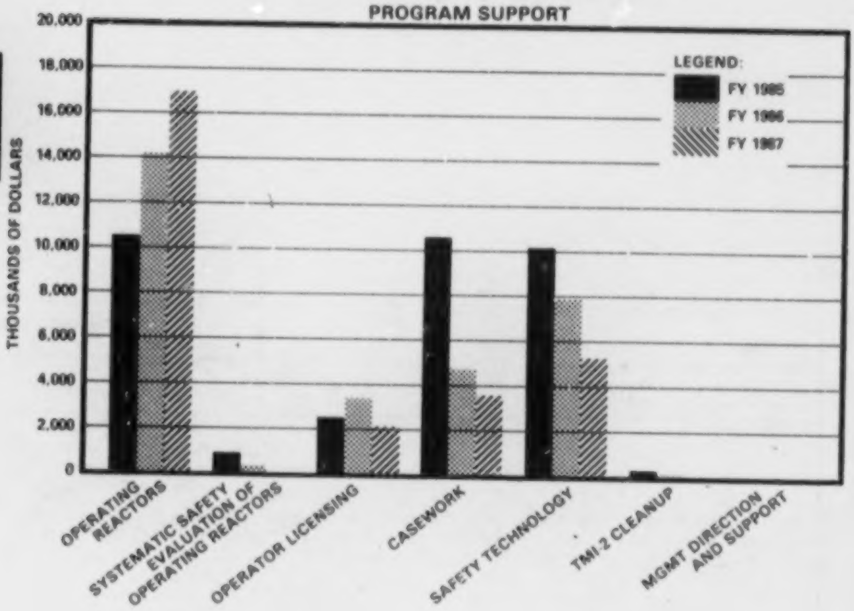
15. AVAILABILITY STATEMENT
Unlimited

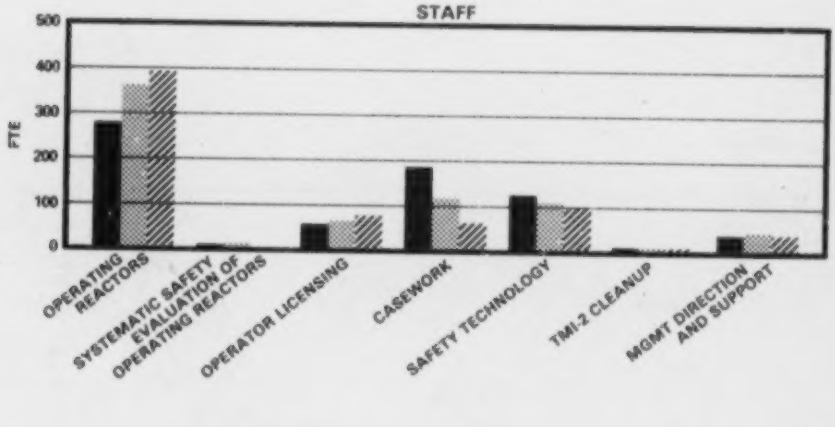
16. SECURITY CLASSIFICATION
(This page)
Unclassified
(This report)
Unclassified

17. NUMBER OF PAGES

18. PRICE

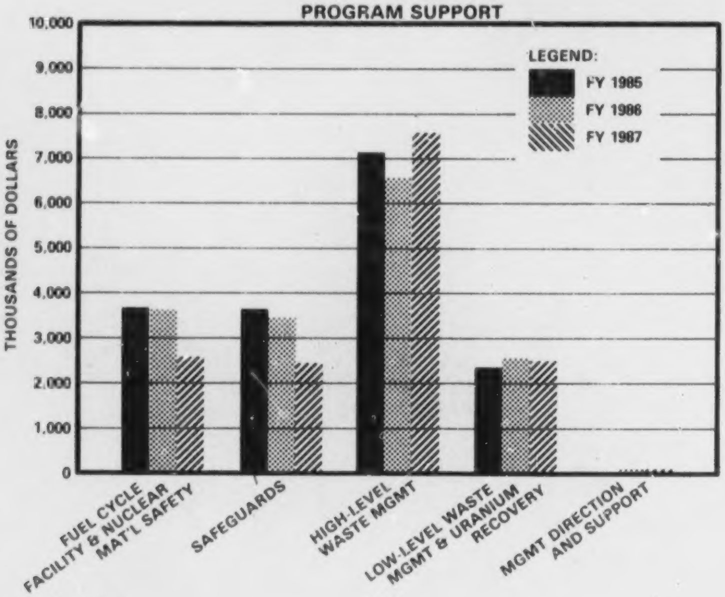
NUCLEAR REACTOR REGULATION

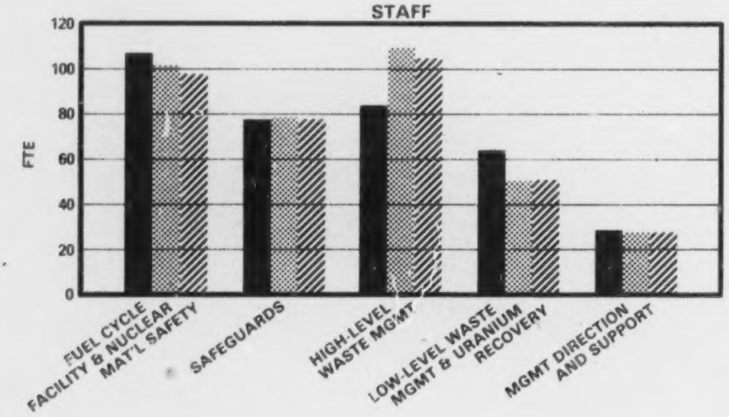




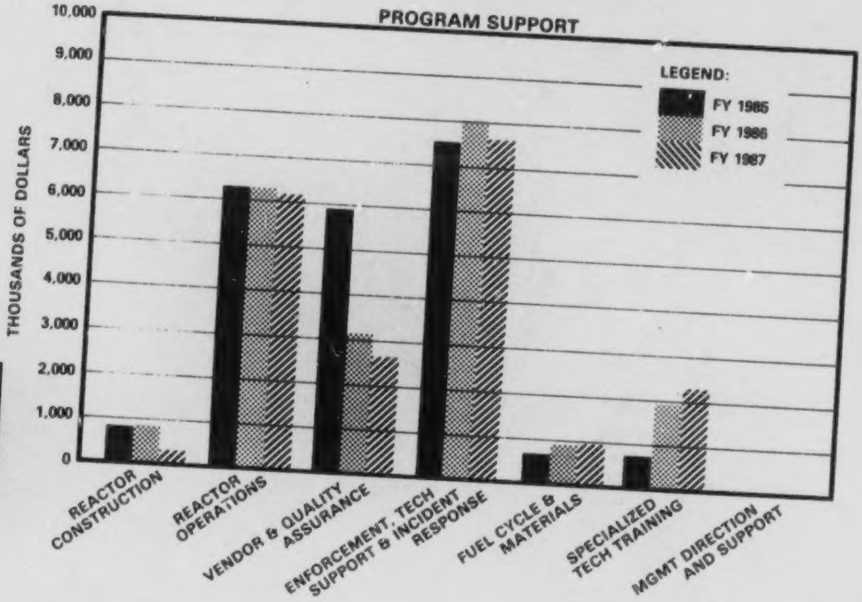
NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

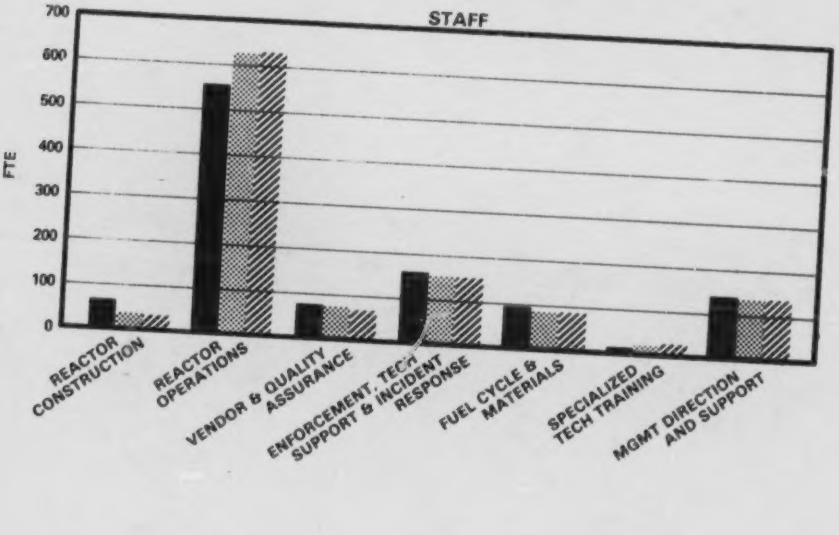
NUCLEAR MATERIAL SAFETY AND SAFEGUARDS


PROGRAM SUPPORT


STAFF

INSPECTION AND ENFORCEMENT





THURSDAY, MARCH 13, 1986.

DEPARTMENTAL ADMINISTRATION

WITNESSES

MARTHA O. HESSE, ASSISTANT SECRETARY, MANAGEMENT AND ADMINISTRATION

J. MICHAEL FARRELL, GENERAL COUNSEL

GERALDINE P. FLOWERS, DEPUTY DIRECTOR, OFFICE OF MINORITY ECONOMIC IMPACT

THEODORE J. GARRISH, ASSISTANT SECRETARY, CONGRESSIONAL, INTERGOVERNMENTAL AND PUBLIC AFFAIRS

JOHN C. LAYTON, INSPECTOR GENERAL

Mr. BEVILL. The committee will come to order. Madam Secretary, we're delighted to have you with us again. You may proceed as you wish.

Ms. HESSE. Thank you, Mr. Chairman. I am pleased to be here today along with my colleagues to present our testimony in support of the 1987 budget request for the Departmental Administration appropriation. Testimony will be presented by the other spokesmen for the major areas within Departmental Administration, with the exception of two of our colleagues. One is Jo Ann Elferink, who is the Acting Director of Policy, Planning and Analysis; and the other is George Bradley, who is the Acting Assistant Secretary for International Affairs and Energy Emergencies. They could not be here today, but I would like to submit their testimony for the record.

Mr. BEVILL. Their testimony will be made a part of the record.

[Statement of Jo Ann Elferink is included at the end of the hearing record.]

[Statement of George Bradley, Jr., is included at the end of the hearing record.]

Ms. HESSE. And with me today are Michael Farrell, who is the General Counsel; Geraldine Flowers, who is the Deputy Director of the Office of Minority Economic Impact; Theodore Garrish, the Assistant Secretary for Congressional, Intergovernmental and Public Affairs; and John Layton, the new Inspector General. Each will address the budget request for his or her respective office.

With your permission now, Mr. Chairman, I would like to submit my lengthy statement for the record.

Mr. BEVILL. All right. It will be made a part of the record.

OPENING STATEMENT OF MARTHA O. HESSE

Ms. HESSE. I would like to make just a couple of comments about what we have accomplished in the last year or so in Departmental Administration. As you know, one of the ideas of the Reagan Administration in the area of management improvement has been a program called Reform 88. Some of the programs that have been of interest and importance to us in improving the management and efficiency of the Department of Energy, such as consolidating payroll and personnel systems, compatible standardized accounting system, and office automation system, I'm very happy to say have been implemented. The Department of Energy is the first of any Government organization to have those systems in conformance with our goals and ideals. And I think that we're actually very proud of that and our accomplishments.

Our funding request for FY 1987 is $315 million. Of this, $155 million is for salaries and related expenses, about $133 million is for support services and capital equipment, and $16 million is for in-house energy management, as well as $11 million for the technical information management program.

The overall staffing and program level for the support activities within these accounts is essentially the same as reflected in 1986. And, I think in the interest of time, I would like to conclude my oral remarks and introduce Michael Farrell, who is prepared to talk about the activities of the Office of General Counsel.

[Statement of Ms. Hesse is included at the end of the hearing record.]

GENERAL COUNSEL

Mr. **Farrell**. Good morning, Mr. Chairman. It's a pleasure to be here this morning to appear before you. We have submitted a statement for the record and we request to make it a part of the record.

Mr. **Bevill**. Yes. Your statement will be made a part of the record.

Mr. **Farrell**. Thank you very much, Mr. Chairman. I would just make a few short opening remarks. My office provides legal services necessary for the Secretary and all the remaining officers of the Department and their programs. Our budget request for this year is approximately $9.9 million, which is a slight increase over the previous year.

I'd like to emphasize just a few accomplishments of the General Counsel's office during the last year, if I could. First, we've had several major litigation successes. One, of course, is the Exxon program where $2.1 billion was given to the States through the Department of Energy as a result of the Exxon overcharge cases.

The Great Plains litigation, where the General Counsels, all of us, in conjunction with the other Assistant Secretaries, went to court in the District Court of North Dakota and obtained to protect the taxpayers' interest in the Great Plains Gasification Project.

One of the major accomplishments of the Counsel's office is our intervention in State power ratemaking proceedings. This is an ongoing activity. And since 1981, we have intervened in a number of cases. We have saved, for the Department, approximately $16 million annually, $77 million for fiscal year 1986. Those are nonrecurring expenses that have been obtained for the Department during the last year.

These cases represent, or hearings represent, the rates charged to our facilities; the laboratories and any of our other operations offices, and continuing a positive cashflow to the Department and of course back to the taxpayers.

Right now, in the coming year, we have requested 166 full-time employees for both 1986 and 1987. In my opinion, we can adequately service the needs of the Department and the secretarial officers with this number.

Some of the major cases we will be handling this year is again, the continuation of the Great Plains litigation. It's up on appeal now to protect our interests and the ultimate disposal of the facility back to the private sector. We have uranium contract litigation and the resulting rulemaking that we're working on right now to solidify the position of the Department in supplying services to our customers, both domestic and foreign.

We're actively involved in the upgrade of the safeguards and securities at our facility. We're actively involved with Mr. Garrish's office, legislation, in the legislative process and drafting legislation which will be coming before Congress.

In sum, Mr. Chairman, I'd just like to say that with our requested fiscal year 1987 budget of $9.9 million, we can continue to provide the professionalism in rendering legal services which the office has furnished to the Department in the past and will continue in the future.

Thank you very much, Mr. Chairman.

[Statement of Mr. Farrell is included at the end of the hearing record.]

Mr. BEVILL. Very good.

Ms. HESSE. Now, Mr. Chairman, Gerri Flowers, who is with the Office of Minority Economic Impact, would like to present her testimony.

OFFICE OF MINORITY ECONOMIC IMPACT

Ms. FLOWERS. Mr. Chairman, Members of the subcommittee, I am Geraldine P. Flowers, Deputy Director of the Office of Minority Economic Impact. I appreciate the opportunity to discuss briefly the office's fiscal 1987 budget request. With your permission, sir, I will submit my more lengthy statement for the record.

Mr. BEVILL. It will be made a part of the record.

Ms. FLOWERS. Thank you. The Office of Minority Economic Impact is responsible for a number of ongoing minority program activities in three major categories. The categories are socio-economic research, management and technical assistance, and financial assistance.

In addition, the office is responsible for the coordination of the Department's implementation of Executive Order 12320, The Historically Black Colleges and Universities Initiative. The OMEI request for FY 1987, is $1,789,000. At this level of funding, the office will conduct the following programs:

In research, the office will continue to incorporate national and regional economic, residential, and transportation data and increase the level of minority representation information, and enhance the Minority Energy Assessment Model's capability by updating and incorporating new modelling methodologies.

We will continue to incorporate special impact and economic studies, data and analysis on minorities into assessments for DOE legislative and regulatory actions, and in the formulation of policy and programmatic options.

We will continue to focus on market research and financial planning analysis to provide minority businesses with information to assist them in their planning efforts to assess business potential in specific new energy technologies.

In management and technical assistance, the Minority Educational Institution Assistance direct support will continue to provide for a core-cadre to start-up operations of science and technology research and development centers. These centers will provide an administrative infrastructure to moving the minority institutions into a fully competitive posture. General technical support will be provided to nonresearch oriented minority institutions. Activities to enhance private sector interaction will continue.

Focussed technical assistance will continue to be provided to minority businesses. Outreach activity and data collection will be the basis for providing advice to the Secretary on the impact of policies and programs on minority businesses. Assistance will be furnished to DOE officials on ways to increase minority business enterprise participation.

Mr. Chairman, this concludes my remarks. I would be happy to answer any questions which you or any Members of the subcommittee might have.

[Statement of Ms. Flowers is included at the end of the hearing record.]

Mr. BEVILL. Very good.

CONGRESSIONAL, INTERGOVERNMENTAL, AND PUBLIC AFFAIRS

Ms. HESSE. Mr. Chairman, the next spokesman is Ted Garrish, who is the Assistant Secretary for Congressional, Intergovernmental and Public Affairs.

Mr. GARRISH. Mr. Chairman, it's a pleasure to appear here this morning. In our 1987 request, we are asking for $4.9 million, which is a slight reduction from our FY 1986 numbers. Our role in our office has remained essentially unchanged. We are responsible for coordinating the activities before Congress, before the States, and also in the public affairs arena.

Over the last year we've had approximately 150 hearings before Congressional committees, over 300 witnesses, which our office is responsible for coordinating. We've had a large number of public inquiries; more than 8,000 people have requested energy information, and we've responded to those inquiries.

We have worked on a number of important issues over the last year, and many of those will continue this year. Nuclear license reform, Superfund, uranium enrichment and nuclear waste, are some of the issues that are of continuing interest to the public and to the Congress, and we will be working on those this year.

With our request, we believe that our office can maintain the same high level of professional standards in dealing with the Congress. And we look forward to working with this committee and other committees in that process.

I'd be happy to respond to your questions. Thank you.

[Statement of Mr. Garrish is included at the end of the hearing record.]

INSPECTOR GENERAL

Ms. HESSE. And the last spokesman is the Inspector General, John Layton.

Mr. LAYTON. Mr. Chairman, it's a pleasure to have this opportunity to address the Members of the subcommittee. I have submitted a statement which I would like included in the record.

Mr. BEVILL. It will be included in the record.

Mr. LAYTON. In summary, our 1987 budget request is for $21.1 million to support 178 FTE's. This includes funding for $5.78 million to contract with independent public accountants to augment our auditing resources. It also includes $4.5 million to reimburse the Defense Contract Audit Agency for audits that they do on our behalf.

I appreciate the opportunity to answer any questions you may have.

[Statement of Mr. Layton is included at the end of the hearing record.]

Mr. BEVILL. Madam Secretary, you mention that Jo Ann Elferink, Acting Director of the Office of Policy, Planning and Analysis; and George Bradley, Acting Assistant Secretary of International Affairs, could not attend today's hearings. This is most unusual. Even our cabinet members never miss a hearing, because this is their request for funds for the next year.

I assume there's something very important to keep them away and not here to answer questions about their request. Of course, if the committee has any questions, we have nothing we can turn to since they're not here. We'd be inclined to leave the funding out for that particular part of the request.

They do take a big risk in not being here. Would you mind stating for the record why they're not here?

Ms. HESSE. Yes. Mr. Chairman, they regret very much that they are unable to be here today. Mr. Bradley is in the Far East with the Secretary and was simply not able to be available for this hearing. Jo Ann Elferink, who is the Acting Director of the Office of Policy, Planning and Analysis, also has a similar commitment and was not able to be here today. But they do regret it.

They are very much interested in funding for their particular areas, and would be pleased to answer any questions that you might have.

MANAGEMENT INITIATIVES

Mr. BEVILL. Well, I regret they're not here, too. Madam Secretary, much attention has been paid to the so-called Grace Commission Report. The Department implemented this report through savings from management initiatives.

What is the status of this program, and why are there no savings from management initiatives in the fiscal year 1987?

Ms. HESSE. Well, Mr. Chairman, the management initiatives program is alive and well, and we have a very active, aggressive program. We have to date saved many hundreds of millions of dollars in the various areas that we call management initiatives; such as cash flow, in deobligation of prior year funds, in procedural reforms, in better utilization of the contractor employees, in increased recoveries from audits, and I think in improved efficiencies in both clerical, administrative, and personnel staffing.

There are no specific initiatives identified in the FY 1987 budget as a line item. We do, however, reflect over $100 million of savings associated with management initiatives, and we can provide for the record the identification of those.

Mr. BEVILL. Well, I think that's commendable and you're certainly doing a good job. I'm not questioning that. But for years I've been hearing about the Grace Commission, you know, about 70 percent of the Grace Commission can be implemented administratively. All they say is Congress ought to adopt the findings of the Grace Commission. That's why I'm asking the question.

It puzzles me that we hear so much about the Grace Commission and what it will accomplish. Yet, the Administration does nothing about it. They just talk about it. What you have done yourself there is on your own. This is not the Grace Commission, as I understand it.

Ms. HESSE. Well, Mr. Chairman, the Grace Commission did have specific recommendations for the Department of Energy. They had specific recommendations in the area of staffing, for example, in the ratio of clerical staff to supervisors. They had recommendations in the organizational area. They had recommendations concerning micromanagement of the GOCO contracts.

All of those we have implemented, so those are a direct reflection of the Grace Commission.

Mr. BEVILL. Well, that's good. I'm glad to hear that because I've been hearing about it for years and I haven't heard anybody do anything but talk about it. So you have done something.

Ms. HESSE. Yes, sir, we have.

INCREASE IN MANAGEMENT AND ADMINISTRATION

Mr. BEVILL. Well, that's good. Please explain why the funding for Management and Administration increases from $121.5 million in FY 1986 to $140.1 million in FY 1987.

Ms. HESSE. Well, the overall budget for—

Mr. BEVILL. That's not the results of the Grace Commission, is it?

Ms. HESSE. No, sir. The overall budget for the Department of Energy is, of course, increasing. Management and administration is a support staff function, and we must provide services both for those areas that are going through increases, as well as those areas that are going through decreases. And so, our level of funding or the level of support that we must provide to the Department is generally level.

We've also had a number of significant increases in fixed costs. GSA is charging us 65 percent more for rent for the Forrestal Building in 1987 than they did in 1986.

Well, having said that, our FY 1987 level is the same as our pre-Gramm-Rudman FY 1986 level. What we intend to do is use unobligated balances and request your approval of reprogrammings to bring our FY 1986 level up to essentially what it was in FY 1985 and what it will be in FY 1987. I guess that's a long answer for saying that we really are not reflecting an increase, per se, in the level of support that we're providing or in the level of funding that we intend to expend.

GENERAL COUNSEL

Mr. **Bevill**. You're very convincing. Mr. Farrell, what are the major items of litigation facing DOE in FY 1986 and FY 1987?

Mr. **Farrell**. Mr. Chairman——

Mr. **Bevill**. Pending lawsuits.

Mr. **Farrell**. Pending lawsuits? One of our major, of course, pending lawsuits is the Great Plains litigation. That is a facility that will be in the Court of Appeals. The District Court upheld in January the validity of our contract and has allowed us to proceed with foreclosure on the Great Plains facility, which is in Beulah, North Dakota. That will take considerable effort during the coming year. With an appeal in the foreclosure process, the options available to the Department will be greatly involved in that.

Another area, of course, is the uranium enrichment contracts. The District Court in Denver, Colorado has ruled on a portion of those contracts; i.e., put them in question. That's up in the Court of Appeals. We also have a rulemaking underway at the same time. It's a major interest to the Department and will effect the Department greatly.

We'll have a continuing interest in what is referred to as the stripper well litigation. That is before Judge Tyce in Kansas. We will be involved in that. Although ERA is really the prime interest in that, we also are involved in that process.

We will continue to be involved in the litigation of the Nuclear Waste Policy Act, where we're having a considerable amount of litigation in the east coast, west coast, north, south, on the siting of our deep geological repositories on the monitored retrieval storage system which is proposed for Tennessee at this point. We've got a District Court saying we're not allowed to send in an opinion, a background report to Congress. We have a Court of Appeals that says they have jurisdiction. An awful amount of time will be devoted to that type of litigation.

Radiation litigation continues in the west. Although we won in the District Court a dismissal in the radiation litigation, it is up in the Court of Appeals. We have several of the radiation litigation cases on appeal which will have a great effect upon the use of my office.

That's just a brief sketch of what we have, but——

Mr. **Bevill**. How many lawyers do you have?

Mr. **Farrell**. There are 119 attorneys among the 166 full-time employees authorized both in FY 1986 and in our request in FY 1987.

Mr. **Bevill**. Do you get any legal help, from the Justice Department?

JUSTICE DEPARTMENT COORDINATION

Mr. **Farrell**. Oh, yes, sir. The lead counsel in most of these cases is the Justice Department. We, in our expertise, were required and are also heavily involved in this. Really the expertise is with the Department in the operation offices. We supply them a great deal of information and legal support, legal drafting. Yes, we interface considerably with the Department of Justice.

Mr. BEVILL. Is your number of cases growing or are they declining?

Mr. FARRELL. It is growing.

Mr. BEVILL. Is any action being taken to try to reduce the litigation? Do you make policy recommendations to try to reduce the litigation rather than have it continuing?

Mr. FARRELL. Mr. Chairman, the vast majority of our litigation is defensive in nature. We are recipients. We are the defendant in this litigation. As to the policy making aspects, of course we advise the Department on the legal aspects. But yes, the Secretary and everyone at this table is advised by our office. But we really have no control over who is going to sue us. Some of them are frivolous suits, some of them are serious suits. But we must respond.

Last night, I understand, we're getting—as an example, Mr. Chairman, if you don't mind my continuing.

Mr. BEVILL. Yes.

Mr. FARRELL. I understand a suit was filed against us, the Department of Energy, out in the State of Washington over a possible docking of a ship coming in. I mean, excess, more litigation is coming. The applicability of a number of statutes will be involved, Federal supremacy, States' rights, all of that will be involved there. It was not contemplated. It was not unexpected, but it was not contemplated in that jurisdiction. But it's another example of the type of litigation we get involved in.

And the Nuclear Waste Policy Act, we're mandated by statute to proceed with a first repository and a second repository. We're proceeding with all prudent speed at the Department, in my opinion. I am not the policy maker in the Department, I'm just the general counsel. But we do respond to these things.

Mr. BEVILL. I get concerned about the Federal Judiciary and the rate that it's growing. We are increasing the number of U.S. District judges and then we have to build courthouses, then they have to have staffs, and, of course, they retire at full salary. It's a tremendous expense.

We are continually expanding Federal jurisdiction. When you look at the statistics, it gets alarming. I guess every department's litigation is increasing. It seems that some time we would reach a peak where it would level out.

Of course, since you're the defendant, I'm preaching to the choir. But it does cause me concern.

Ms. Flowers, I know you don't want to get left out. Describe the rationale for decreasing your FY 1987 program.

OFFICE OF MINORITY ECONOMIC IMPACT

Ms. FLOWERS. Fine. There is not a significant reduction in the FY 1987 budget over FY 1986 when you look at line items and see that in FY 1986 we include $393,000 which is proposed to be deferred into FY 1987. If you subtract out that almost $400,000, you will see that the bottom line budget figures are about equal.

There's a slight reduction from $2.2 million to $2.1. The reduction is not significant.

Mr. **Bevill**. So it would be about the same as FY 1986 then.

Ms. **Flowers**. That's correct.

CONGRESSIONAL INTERGOVERNMENTAL AND PUBLIC AFFAIRS

Mr. **Bevill**. Mr. Garrish, would you provide a general description of the objectives of your programs and how they impact on the Department's programs?

Mr. **Garrish**. Yes, Mr. Chairman. Our responsibilities involve three separate organizational areas. Principally, in the legislative and Congressional area, our responsibilities involve coordinating witnesses for hearings, and coordinating the activities of ensuring that the testimony is prepared properly and sent to the committee. We work on a number of ongoing legislative efforts such as the nuclear licensing reform package, natural gas deregulation, asset divestiture, Superfund, and numerous other issues.

Our office is involved with Congressional concerns and relaying those concerns to the appropriate individuals within the Department who are involved with those issues.

Additionally, we have the public affairs function in which our office is responsible for coordinating all of the briefings, and all the activities to communicate the Department of Energy's programs to the press and public on the major decisions that we have made within the Department.

In addition to that, we have an intergovernmental affairs function which oversees our activities with the States. One area that is particularly critical to the States is the nuclear waste issue. There have been numerous meetings around the country on this issue. Our staff participates in those meetings and assists the Office of Civilian Radioactive Waste Management in the process of communicating to the States the impact of those decisions.

We are also responsible for activities in the consumer area in which we attempt, wherever possible, to have a responsive and consumer oriented program in those areas that are impacted by our energy policies. In addition, we have the Office of Competition which attempts to take certain specific areas and study them to make sure that the policy makers in the Department are aware of the impacts of their activities on competition.

We virtually impact every policy area within the Department. And the individuals within my office work on a daily basis with Assistant Secretaries and the policymakers within the Department to ensure that the Congressional and State and other concerns are fully reflected in our policies.

INSPECTOR GENERAL

Mr. **Bevill**. Mr. Layton, how much funding is included in your FY 1986 and FY 1987 for contracted audit functions? What are the primary purposes of these contracted audits?

Mr. **Layton**. Mr. Chairman, the FY 1986 funding for the independent public accountants was $3.7 million, and in FY 1987 we've asked for $5.8 million. The Defense Contract Audit Agency amount in the FY 1986 budget was $5.6 million, and we've reduced that to $4.5 million in FY 1987. Now, the reason for that reduction is that we have experienced a reduced workload of jobs requiring the Defense Contract Audit Agency and feel we can better utilize independent public accountants to cover our audit requests.

The second part of your question, then, is how do we use these contract auditors. In essence, it's an opportunity to expand the skills, the talent pool that we have available to meet the requirements of the various programs that the Department is in.

Another benefit from having the contractors is that they are available where we need them. I think it reduces the travel costs that we would incur otherwise. I've been with the Department for two months now, and I'm taking a look at how we would use those contractors myself at this point.

Mr. BEVILL. Do you have minimum standards for these people? For example, are your accountants all certified public accountants?

Mr. LAYTON. Our own staff are not all certified public accountants, nor are the contract auditors. They are a mixed bag. Some of them are CPA's, some of them are not.

Mr. BEVILL. It's not required, then.

Mr. LAYTON. No.

Mr. BEVILL. Well, this is your first appearance and we're delighted to have you appear with us. And, Mr. Farrell and Ms. Flowers this is your first also, isn't it?

Mr. FLOWERS. Mr. Chairman, this is my first.

Mr. BEVILL. Ms. Hesse, you must have cleaned house over there. [Laughter.]

Mr. BEVILL. Well, it's nice to have our lady members here now and the gentlemen, too. But Mrs. Boggs especially, because this is her 29th birthday. Happy birthday to you.

Mrs. BOGGS. Thank you very much.

Mr. BEVILL. The Chair recognizes Mrs. Smith.

STAFF REDUCTIONS

Mrs. SMITH. Thank you, Mr. Chairman. And welcome to all of you today. I really only have one question. Do you expect to reduce your staff due to the budget cutting efforts? And if so, what effect would this have on you?

Ms. HESSE. I think that throughout the Department we expect that there will be reductions in staff in 1987. We expect that those reductions will follow programmatic levels. For example, if decreases in the fossil budget are in fact enacted, there will be decreased requirement for staff in the fossil area.

As far as Management and Administration is concerned, and I think actually with all of the support service areas of the Department, that we expect staffing levels to remain reasonably consistent between FY 1986 and FY 1987.

Mrs. SMITH. Thank you very much, Mr. Chairman.

Mr. BEVILL. The Chair recognizes Mrs. Boggs.

Mrs. BOGGS. Thank you, Mr. Chairman. Good morning, and I thank all of you for being here. It's nice for Virginia Smith and me to look out over the center table and see as many women there as we have up here.

Mr. **Bevill**. The question is how many women do you have on your payroll? I guess I ought to ask how many men do you have on your payroll?

Mr. **Fazio**. It's come to that.

Mrs. **Boggs**. It's come to that. Not many years ago I sponsored a bill for the Women Air Service Pilots of World War II. It was referred to as the WASP bill. I was going into the cloakroom one day and had a note from my staff, concerning the WASP bill. A colleague said to me, I don't know what that bill does, Lindy, but there's so few of us left, could I get on it. Welcome to all of you, and thank you for the truly valuable work that you do.

OFFICE OF MINORITY ECONOMIC IMPACT

As you know, there is considerable support in Congress for the programs and activities of the Department's Office of Minority Economic Impact. And the subcommittee's FY 1986 bill included an additional $1 million for the Office of Minority Economic Impact.

Please explain how these funds are being used in this fiscal year.

Ms. **Flowers**. Yes. In this fiscal year, we are using one-half of that funding, and we are requesting a deferral of the remainder into FY 1987. The reason for that request is to continue into 1987 a major program activity in support of minority educational institutions that began in FY 1986.

Mrs. **Boggs**. I was going to ask about that. There is so much interest, particularly in the last week, about minority education and the various studies that have been conducted. I've been particularly interested in the minority educational institutions assistance program.

Could you tell me what the status of that funding is aside from the deferral funding?

Ms. **Flowers**. Yes. The funding is available to us, and we have received authority within the Department to proceed with a major solicitation which will invite competition, so that we may select an organization. In fact, it will be four organizations as we propose the project, to engage in the development of major research and development centers within the institutions, and to involve the private sector in developing some interrelationships which we hope would benefit the minority organizations. That is ongoing at the moment.

Mrs. **Boggs**. And the deferral is a true deferral into fiscal 1987. It's not going to be reprogrammed for something else, is it?

Ms. **Flowers**. It is absolutely a deferral, and it is expected to be devoted to this program activity.

Mrs. **Boggs**. And you don't feel that you can use the whole 1986 appropriation for this year?

Ms. **Flowers**. No, we felt that we could not.

Mrs. **Boggs**. Thank you very much. Thank you, Mr. Chairman.

Mr. **Bevill**. All right, the Chair recognizes Mr. Myers.

Mr. **Myers**. Mr. Chairman, please let the other members go ahead and I'll reserve my time.

Mr. **Bevill**. The Chair recognizes Mr. Fazio.

Mr. **Fazio**. Thank you, Mr. Chairman. I'd just like to thank Mr. Garrish for the good work that he did on behalf of the Department last year making it possible to develop that intertie in the northwest. We'll have some questions along those lines as it relates to FERC later on.

UNITED STATES CITIZENS IN SOUTH AFRICA

But I did want to just ask Ms. Hesse if you could tell us the current status of the people that were alleged to be employed in South Africa to work on nuclear powerplants. There was some concern about signatories to the Nuclear Nonproliferation Treaty and employment of technical people in those countries where there might be the allegation of the use of these people for non-peaceful pursuits.

Could you update the committee?

Ms. Hesse. Yes. I know that this was an issue that we were very concerned about last year. It's my understanding that we have come to terms with each of those people. We have identified all of those that we can, and have either given them written permission to be in that country or they have returned to the United States. I'd like to supply for the record, if I might, a specific analysis.

[The information follows:]

United States Citizens Employed in South Africa

The State Department informs us that there is no requirement for United States citizens to register in South Africa; we, therefore, are unable to ascertain the number of U.S. citizens employed there.

In late 1984 the Department of Energy became aware that several U.S. citizens were working in support of the Koeberg Nuclear Power Station without DOE authorization pursuant to 10 CFR Part 810. DOE distributed a general letter through the U.S. Embassy to these citizens, instructing them to apply for authorization if they were engaged in activities covered by Part 810. As a result, all those doing work subject to the regulations applied for specific authorization; several noted they had been unaware that this was necessary. A DOE fact-finding team was then sent to South Africa to assess the situation and reported that these persons had stopped their unauthorized work. After a thorough review of all aspects of these requests, the Secretary on June 22, 1985, denied authorization to all 22 applicants.

In an attempt to avoid repetition of this situation, DOE prepared a public announcement on the coverage and intent of Part 810 that the Nuclear Regulatory Commission distributed to all U.S. reactor licensees. This alerted many people to the existence of the regulation and what activities are covered.

Mr. Fazio. I would appreciate that on a case by case basis, and anything else you could provide for the record to indicate how in the future we could avoid this sort of problem. What procedures the Department has in place to monitor more carefully possible violations of law.

Ms. Hesse. We'd be pleased to do that.

Mr. Fazio. Thank you. Thank you, Mr. Chairman.

Mr. Bevill. The Chair recognizes Mr. Boner.

MONITORED RETRIEVABLE STORAGE

Mr. Boner. Mr. Chairman, I have some questions for Mr. Farrell. First of all, I notice in your written statement that you made no mention of the MRS law suit filed by the State of Tennessee. Am I correct in my understanding that DOE has been enjoined from submitting its MRS proposals to Congress?

Mr. Farrell. Mr. Boner, the District Court has enjoined the Department from submitting the report to Congress. We're also present before the Court of Appeals, the 6th Circuit in Kentucky, on the same issue. A briefing schedule has been set.

Mr. **Boner**. What steps are being taken to make sure that DOE is in compliance with the statutory view to consult and cooperate with the State of Tennessee?

Mr. **Farrell**. Mr. Boner, as to the District Court—there's two different suits, of course, and they're both related. We will await the outcome of the final decision by the court.

Mr. **Boner**. So at this point you aren't really communicating with the Governor of Tennessee to get a decision from the District Court?

Mr. **Farrell**. Someone else would have to answer, Mr. Rusche's office or somebody like that of the actual computations. I can answer it from the legal aspect of it. But we have given the requirement that the report does not come before the Congress until there's a final decision by the court.

PERMANENT WASTE REPOSITORY

Mr. **Boner**. Is the Department of Energy involved in any similar legislation—or litigation, with any of the proposed States for the permanent repository?

Mr. **Farrell**. Well, MRS is separate and distinct from the repository, but we certainly have—

Mr. **Boner**. Right. What I'm after is: are there any other States where you're looking at possible repository sites—I believe there are three—are you in any litigation with any of those States?

Mr. **Farrell**. If I can answer it in two parts. First, of course, would be the first repository. There was litigation last year which we won. It was dismissed by the State of Texas on the first repository. The second is that we have a second repository. I think it was in January or February we announced our seven possible States for possible sites. Litigation has been instituted there on that.

Mr. **Boner**. For all of the sites?

Mr. **Farrell**. No, not for all of the sites. I'd like to submit it to the record. I'll be glad to submit that for the record.

[The information follows:]

Litigation on Second Repository

On January 16, 1986, the Department of Energy issued the draft Area Recommendation Report for the Crystalline Repository Project. The draft report contains the results of the screening process and identifies 12 proposed potentially acceptable sites in seven states (Maine, New Hampshire, Minnesota, Wisconsin, Georgia, North Carolina, and Virginia) for further study for the second deep geological nuclear waste repository. As indicated in the January 10, 1986, Federal Register notice, the Department set a 90 day comment period, which will expire on April 16, 1986, for written comments on the draft report.

On February 14, 1986, the State of Maine filed a petition in the U.S. Court of Appeals for the First Circuit for review of the Department's decision to establish a 90 day comment period and the denial of the state's request to extend the comment period. The state also filed a motion for stay of the comment deadline or, in the alternative, an expedited review of the petition. On February 19, 1986, the State of New Hampshire initiated litigation requesting similar relief.

CONTRACTOR LOBBYING REGULATIONS

Mr. **Boner**. All right. When Secretary Herrington was before our subcommittee, I asked him about DOE's intent in issuing regulations, which, among other things, could effect how the Members of this subcommittee do their jobs. The notice of proposed rulemaking appeared the very next day in the March 4th Federal Register.

Could you outline DOE's intent in issuing these regulations?

Ms. **Hesse**. Those regulations have to do with requirements that were given to us as part of the DOD authorization bill in 1986 and concerned particularly cost principles, and even more specifically lobbying. It is our intent that we would pay for travel. The lobbying costs actually refer to travel only. We would pay for travel costs associated with the visits to Congress that were requested either by the Chairman or the ranking minority in writing for either a hearing or a formal meeting. Certainly telephone calls and all sorts of communications through the mail are not effected in the least.

Having said that, I should say also that for time immemorial the M&O contractors have been required to follow certain cost principles. Existing cost principles apply to lobbying costs, and they are almost exactly the same as those that we put forth in the Federal Register. We actually see no change in the way that Congress deals with our contractors and with our employees.

Mr. **Boner**. As I read the new rules, I think that some of the Members of the subcommittee, with the exception, of course, of Mr. Bevill and Mr. Myers, would we be unable to call a constituent who happens to be working under the DOE contract and ask him to come to D.C. and brief us on some aspect of their work, unless that constituent were willing to pay his or her cost out of their own pocket?

Ms. **Hesse**. Well, I think that they could come and the Department of Energy would pay for their travel costs if the employee received a written request signed by either the Chairman or the ranking minority.

Mr. **Boner**. The next question along that line, are these regulations an attempt to prevent any point of view except that of OMB from reaching Congress? And do they in anyway, in your opinion, raise questions about DOE's good faith in dealing with the Members of Congress?

Ms. **Hesse**. I don't think that these regulations have any intent of not permitting people who have different opinions, or whatever opinions these people might have, of discussing their opinions with Congress. It's certainly not a gag rule by any stretch of the imagination.

Mr. **Boner**. So, if I could restate in East Nashville language, where I come from, what you understand the intent of the rule to be. Any employee that works for a contracting agent in the operation and management of some activity, such as Oak Ridge, for an example, that the Department of Energy would pay their expenses if the request were made by either this subcommittee Chairman and the ranking minority leader, as well as the chairman of the full committee and the ranking Member of the full committee

Ms. **Hesse**. That's correct.

Mr. **Boner**. And that would be also appropriation as well as on the authorizing side, whatever their areas of legislation would be?

Ms. **Hesse**. That's correct.

Mr. **Boner**. And that if that request is made, DOE will not determine whether it should be made. If the request was made by them, then their expenses would be paid.

Ms. **Hesse**. That's correct.

Mr. **Boner**. You used the term "a formal meeting." What do you mean when you say if it was to testify or a formal meeting. Would you enlighten me what you mean when you say a formal meeting?

Ms. **Hesse**. Well, I think when I said formal meeting, I meant a meeting that is requested in writing by either of those two individuals.

OFFICE OF MINORITY ECONOMIC IMPACT

Mr. **Boner**. OK. Ms. Flowers, I have one question I'd like to ask you. In the 5th District of Tennessee, that I represent, we have three nationally recognized predominantly Black universities; Fisk, Tennessee State University, and Meharry Medical College. I've noticed that of the three, only Fisk is involved in the Oak Ridge Associated Universities Program. Recently, both TSU and Meharry have expressed an interest in getting involved in this program.

Can you tell me what sort of outreach programs you have for minority colleges and universities? Specifically, what steps can be taken to involve both TSU and Meharry

Ms. **Flowers**. Yes. I can't speak for the Department as a whole. There are numerous activities within the Department that might benefit those two organizations. I mentioned earlier that we are beginning this fiscal year and will continue into next fiscal year a major solicitation which would allow for support to minority institutions for infrastructure development and for research centers and other kinds of activities. I would assume that the publicity would reach those institutions and they could effectively compete for a share of the activity.

Mr. **Boner**. Thank you. Mr. Chairman, I have no further questions.

Mr. **Bevill**. The Chair recognizes Mr. Myers.

Mr. **Myers**. Well, thank you, Mr. Chairman. I apologize for getting here late. I had to be over across the Capitol at that other body at 10:00.

I only have a couple observations. First, on page two, Ms. Hesse, you speak of implementing a standardization in accounting principles. As one Member of this committee, I certainly welcome that and compliment you for this effort. We find that the various agencies throughout the Federal Government are inconsistent in it, how they set up their accounting, and how they set up their presentations to Congress.

I often speak of my country banking background. We always had a standard financial statement so we could understand it. And I often think that the intention is to try to bewilder us. But I compliment you for simplifying and making it easier for us to understand. I hope that's what the consequences will be. We thank you for that.

Ms. HESSE. Thank you.

URANIUM ENRICHMENT DEMAND CHARGES

Mr. MYERS. Secondly, on page six of your prepared text, you speak about in-house energy management. Yesterday we heard from the uranium supply and enrichment people. We have spent a considerable time questioning a contract they have with TVA that requires take-or-pay. They presently are paying and taking nothing.

Has your counsel ever looked into this contract to see what might be done about paying TVA and not receiving anything for it?

Mr. FARRELL. Mr. Myers, we have looked into it and have looked into it at several occasions. I asked for a review of it when I became General Counsel last May. It is under consideration. It's a very tight contract, and we also have to take legal and political implications of such activity, but we have looked into it, it is under review that we would be proceeding with a type of cancellation picture, if I interpret your question properly.

Mr. MYERS. Well, maybe there could be some kind of a compromise worked out with them—something less than the full price that you're paying now. You are paying $450 million annually and receiving not the first kilowatt for it. It's going to continue for several years and seems like a tremendous loss. TVA will come out with completely clean hands in this contract.

Secondly, have you examined some of the contracts that were abrogated in the natural gas pipeline situation several years ago? Gas companies, utilities, did contract to buy gas under different circumstances. Those were somehow worked out, either abrogated entirely or quite often they settled for less than a dollar for dollar.

I wonder if you have the authority right now to step in and do something about these contracts?

Mr. FARRELL. Mr. Myers, we certainly have the authority to look them over. It's my understanding we have requested meetings with TVA and they do not seem to be—if I can characterize it—enamored with a reduction. But we have looked into it, and we are looking into it today.

Mr. MYERS. Well, I can understand why. They're getting $450 million and not providing any energy for it. It is a tremendous expense, and as a Member of this committee, I am going to be looking into it. That's the only question I have. Keep a tight rein on everything we have to continue cutting down spending. We certainly need your cooperation in working together. We compliment you and thank you for your efforts. You've got a tough job. You make our job easier, though. If you do a good job, it will make it much easier for us.

Thank you. Thank you, Mr. Chairman.

Mr. BEVILL. Yes. Madam Secretary, I'd like to again express my appreciation for the fine assistance provided to the committee by Betty Smedley and Lyn Henderson and Jeanne Wilson of your organization. The Chair now recognizes Mr. Watkins.

Mr. WATKINS. Mr. Chairman, I apologize to the committee for being a little late. I'd like to say I have a very keen, genuine, and sincere interest about how we're spending money and where we're spending money. I think some of you are aware of that.

FOREIGN TRAVEL

Do you handle the, financial records of foreign travel that comes under your agency?

Ms. **Hesse**. Yes.

Mr. **Watkins**. I know that some of your people are not in attendance today for this hearing because they're on foreign travel, is that correct?

Ms. **Hesse**. Sir, it's correct that the Assistant Secretary for International Affairs is with the Secretary in the Far East today.

Mr. **Watkins**. And it's not very important to come before this committee?

Ms. **Hesse**. I think that he considers it very important to come before this committee, and that he regrets that he is unable to be here. The Secretary's trip was scheduled long in advance and they were unable to change the appointments that they had already made in the Far East.

Mr. **Watkins**. I wonder how extensively this is going on. Could you provide for us, for the record, how much is being spent for foreign travel by the Department?

Ms. **Hesse**. Yes, Mr. Watkins, we will provide that for the record.

[The information follows:]

DEPARTMENT OF ENERGY FOREIGN TRAVEL

Department of Energy employees take approximately 1000 foreign trips annually on official business. The great majority of these trips involved fewer than 5 working days overseas. The most frequent destinations are the Federal Republic of Germany, France, Japan, Switzerland and the United Kingdom. These account for approximately 65 percent of all trips; the remaining 35 percent are spread throughout the world.

The Department does not maintain records of leave taken in conjunction with official foreign travel. It is Departmental policy that each travelers' supervisor ensure that approved leave is not untimely in relation to the status of work on which the traveler is involved and does not exceed a reasonable period of time. A basic guideline is that leave should not exceed the total number of business days of the trip.

In FY 1985 the costs for foreign trips taken by Department of Energy employees were approximately $2.5 million. In FY 1986 the estimated costs are $1.6 million. A list of the foreign trips taken by DOE employees in FY 1986 as of April is provided for the record.
(The information follows:)

FOREIGN TRAVEL SYSTEM

Planned Travel by Office
FY 1986

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	* Estimated Cost	Remarks
** TRAVEL FOR OFFICE AL			ALBUQUERQUE OPERATIONS OFFICE						
AL	5	VIENNA	AUSTRIA	10/20/85 10/25/85	QUINN, C.	REPRESENT US AT SECOND ANNUAL MEETING OF THE INTERNATIONAL CONSULTATIVE GROUP ON FOOD IRRADIATION.	DP	2300.00	
AL	8	MILAN	ITALY	02/10/86 02/13/86	FOLSTEIN, R.	PARTICIPATE IN FIRST STEERING COMMITTEE MEETING FOR COOPERATION ON ENHANCED OIL RECOVERY R&D.	FE	2125.00	TRAVELER IS FROM BARTLESVILLE PROJECT OFFICE.
AL	11	PUERTO LA CRUZ	VENEZUELA	02/23/86 02/27/86	WESSON, T.	REPRESENT FIELD OFFICE AND PROVIDE TECHNICAL EXPERTISE AT US-VENEZUELA JOINT STEERING COMMITTEE MEETING ON ENHANCED OIL RECOVERY.	FE	1850.00	TRAVELER IS FROM BARTLESVILLE PROJECT OFFICE. MEMBER OF TEAM OF FOUR DOE EMPLOYEES.
AL	12	LONDON	UK	01/25/86 01/31/86	O'BRIEN, M.	DISCUSS DECONTAMINATION, DECOMMISSIONING DEVELOPMENT, AND WASTE MANAGEMENT.	DP	1500.00	
						TOTAL		8000	

* Totals rounded to nearest thousands.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE BPO			BARTLESVILLE PROJECT OFFICE						
BPO	1	CARACAS	VENEZUELA	11/17/85 11/23/85	WESSON, T.	VISIT REFINERIES TO DETERMINE SPECIFIC PROBLEMS ASSOCIATED WITH REFINING & PROCESSING OF HEAVY CRUDES. IDENTIFY ANALYSES REQUIRED TO ENHANCE PROCESS.	FE	1790.00	
						TOTAL		[illegible]	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE BPA			BONNEVILLE POWER ADMINISTRATION						
BPA	18	VASTERAS	SWEDEN	10/03/85 10/08/85	ESZTERGALYOS, J.	VISIT ASEA PLANT AND MEET WITH ASEA REPRESENTATIVES TO DISCUSS COLSTRIP AND THIRD AC INTERTIE PROJECTS.	BPA	1945.00	
BPA	19	STOCKHOLM	SWEDEN	12/07/85 12/10/85	JOHNSON, P.	TOUR ASEA FACILITIES. ATTEND NOBEL PEACE PRIZE CEREMONY.	BPA	2000.00	MULTIPLE COUNTRIES - SWEDEN AND FRANCE.
BPA	19	PARIS	FRANCE	12/10/85 12/12/85	JOHNSON, P.	MEET WITH OFFICIALS OF ELECTRICITIE DE FRANCE FOR DISCUSSIONS RELATED TO THE COMPANY'S NUCLEAR PROGRAM AND OTHER MATTERS OF MUTUAL INTEREST.	BPA		MULTIPLE COUNTRIES - SWEDEN AND FRANCE.
BPA	20	STOCKHOLM	SWEDEN	01/07/86 01/05/87	GREEN, G.	PERFORM BPA RESEARCH AND DEVELOPMENT WORK AT THE SWEDISH STATE POWER BOARD.	BPA	10000.00	
BPA	21	BADEN	SWITZERLAND	03/02/86 04/30/86	BRANKE, J.	WORK DIRECTLY WITH DESIGN, APPLICATION AND TEST ENGINEERS TO GAIN KNOWLEDGE AND EXPERIENCE ESSENTIAL TO DEVELOPMENT OF ENGINEERING EXPERTISE.	BPA	7200.00	
BPA	22	LUDVIKA	SWEDEN	01/15/86 01/20/86	SCHMIDT, W.	ATTEND FACTORY TESTING OF LARGE CAPACITY AUTOTRANSFORMER FOR ASEA CONTRACT.	BPA	4600.00	
BPA	22	OERLIKON	SWEDEN	01/20/86 01/25/86	SCHMIDT, W.	CONDUCT CONTRACT SURVEILLANCE. DISCUSS TEST PROGRAM AND WITNESS CIRCUIT BREAKER DESIGN TESTS FOR BROWN BOVERI CORP. CONTRACT FOR 242-KV EQUIPMENT.	BPA		
BPA	23	BADEN	SWEDEN	03/03/86 03/26/86	JOYCE, J.	WITNESS DESIGN TESTS OF A 500-KV DC THYRISTOR VALVE SIMILAR TO EQUIPMENT TO BE SUPPLIED ON PACIFIC HVDC INTERTIE TERMINAL EXPANSION.	BPA	6300.00	MULTIPLE CITIES - BADEN AND LUDIVIKA.
BPA	23	LUDIVIKA	SWEDEN	03/26/86 03/31/86	JOYCE, J.	DISCUSS HVDC UPGRADE DC FILTER STUDIES GROUP 7, STARTING TRANSFORMER DOCUMENTATION.	BPA		MULTIPLE CITIES - BADEN AND LUDIVIKA.
BPA	24	OSLO	NORWAY	02/08/86 02/14/86	THAREIN, I.	REPRESENT US AT MEETING OF CIGRE INTERNATIONAL STUDY COMMITTEE-39, "SYSTEMS OPERATION AND CONTROL."	BPA	1500.00	
BPA	26	BADEN	SWITZERLAND	02/21/86 03/16/86	YASUDA, E.	REVIEW AND DISCUSS STUDIES ASSUMPTIONS AND RESULTS, INCLUDING MAJOR EQUIPMENT SPECIFICATIONS, UNDER PHASE I OF HVDC EXPASION PROJECT.	NE	3000.00	
BPA	27	BADEN	SWITZERLAND	02/22/86 03/14/86	BUNCH, R.	REVIEW STUDY PROGRESS AND HOLD DETAILED DISCUSSIONS ON STUDIES THAT RELATE TO THE DC SYSTEM OPERATION, MAINTENANCE, CONTROLS, AND PROTECTIONS.	ER	2000.00	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			BONNEVILLE POWER ADMINISTRATION						
BPA	28	OSAKA	JAPAN	03/08/86 03/18/86	CHEN, A.	ATTEND FACTORY TESTING. CONDUCT CONTRACT SURVEILLANCE. DISCUSS TEST PROGRAMS AND QUALITY ASSURANCE FOR POWER CIRCUIT BREAKERS.	BPA	4000.00	MULTIPLE CITIES - OSAKA AND TOKYO.
BPA	28	TOKYO	JAPAN	03/18/86 03/23/86	CHEN, A.	HOLD CONTRACT DISCUSSIONS AND PERFORM PROGRESS REVIEW FOR GAS-INSULATED SUBSTATION EQUIPMENT.	BPA		MULTIPLE CITIES - OSAKA AND TOKYO.
						TOTAL		43000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE CH			CHICAGO OPERATIONS OFFICE						
CH	17	GEEL	BELGIUM	10/03/85 10/06/85	BINGHAM, C.	DISCUSS NUCLEAR REFERENCE MATERIAL PREPARATION AND CERTIFICATION.	CH	1000.00	MULTIPLE COUNTRIES AND CITIES - ITALY AND BELGIUM.
CH	17	ANTWERP	BELGIUM	10/06/85 10/12/85	BINGHAM, C.	REPRESENT US AT IAEA MEETING OF NUCLEAR REFERENCE MATERIAL PRODUCERS/CERTIFIERS.	CH		MULTIPLE COUNTRIES AND CITIES - ITALY AND BELGIUM.
CH	18	SHANGHAI	PRC	10/06/85 10/19/85	TAN, Y.	PROVIDE EXPERTISE IN ANALYTICAL CHEMISTRY APPLIED IN ENVIRONMENTAL MONITORING AND RESEARCH UNDER UN PROJECT FOR TRANSFER OF KNOW-HOW.	UN	0.00	FUNDED BY UNITED NATIONS.
CH	19	BRAUNSCHWEIG	FRG	10/20/85 10/22/85	O'BRIEN, K.	OBTAIN DETAILED GEOMETRY ROUTINES RELATED TO THE CALIBRATION OF EFFECTIVE DOSE IN REFERENCE MAN.	CH	1900.00	MULTIPLE COUNTRIES AND CITIES - FRG AND SWITZERLAND.
CH	19	MUNICH	FRG	10/23/85 10/24/85	O'BRIEN, K.	DISCUSS THE CALIBRATION OF ORGAN DOSES.	CH		MULTIPLE COUNTRIES AND CITIES - FRG AND SWITZERLAND.
CH	19	GENEVA	FRG	10/25/85 10/29/85	O'BRIEN, K.	PRESENT SEMINAR ON NEUTRINO FLUXES, COSMIC RAY HADRONS UNDERGROUND, AND OTHER SELECTED TOPICS.	CH		MULTIPLE COUNTRIES AND CITIES - FRG AND SWITZERLAND.
CH	20	BONN	FRG	12/07/85 12/10/85	WUNDERLICH, R.	EXCHANGE PROGRAM STATUS UPDATE REGARDING SCHEDULES, PRIORITIES, PROGRESS MADE AND FUTURE PLANNING.	RW	2100.00	MULTIPLE CITIES - BONN, BRAUNSCHWEIG, AND GORLEBEN. TRAVELER IS FROM SALT REPOSITORY PROJECT OFFICE.
CH	20	BRAUNSCHWEIG	FRG	12/10/85 12/12/85	WUNDERLICH, R.	EXCHANGE PROGRAM STATUS UPDATE REGARDING ACQUISITION OF DETAILED PLANNING AND RATIONALE USED IN SITU AND FIELD TESTING.	RW		MULTIPLE CITIES - BONN, BRAUNSCHWEIG, AND GORLEBEN. TRAVELER IS FROM SALT REPOSITORY PROJECT OFFICE.
CH	20	GORLEBEN	FRG	12/12/85 12/14/85	WUNDERLICH, R.	EXCHANGE PROGRAM STATUS UPDATE REGARDING OBSERVATIONS OF EXPLORATORY SHAFT CONSTRUCTION.	RW		MULTIPLE CITIES - BONN, BRAUNSCHWEIG, AND GORLEBEN. TRAVELER IS FROM SALT REPOSITORY PROJECT OFFICE.
CH	21	MELBOURNE	AUSTRALIA	03/16/86 03/17/86	KNUTSON, E.	PARTICIPATE IN RADON AEROSOL WORKSHOP.	ER	2745.00	ER. ENVIRONMENTAL MEASUREMENTS LAB.
CH	23	DIDCOT	UK	02/25/86 03/02/86	DE PLANQUE, G.	PARTICIPATE IN THE MEETING OF THE PROGRAMME AND EDITORIAL ADVISORY COMMITTEE OF THE 8TH INTERNATIONAL CONFERENCE ON SOLID STATE DOSIMETRY.	ER	1076.00	ENVIRONMENTAL MEASUREMENTS LAB.
						TOTAL		9000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

** TRAVEL FOR OFFICE RW- CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
RW-23	2	VIENNA	AUSTRIA	01/11/86 01/18/86	BARRETT, L.	ATTEND MEETING OF IAEA ADVISORY GROUP REGARDING FUTURE REVIEW AND REVISION PROCESS OF NUCLEAR TRANSPORTATION REGULATIONS.	RW	2337.00	
RW-23	3	HANOVER	FRG	03/01/86 03/08/86	STEIN, R.	ATTEND AND PARTICIPATE IN IAEA SYMPOSIUM ON "SITING, DESIGN AND CONSTRUCTION OF UNDERGROUND REPOSITORIES".	RW	1989.00	
RW-23	4	VIENNA	AUSTRIA	03/09/86 03/14/86	KLEIN, K.	PARTICIPATE IN ADVISORY GROUP MEETING ON SPENT FUEL MANAGEMENT.	RW	260.00	
RW-32	2	BARNWOOD	UK	02/16/86 02/19/86	EPSTEIN, J.	PARTICIPATE AS THE DESIGNEE OF THE US TECHNICAL REPRESENTATIVE IN THE IAEA CONSULTANTS' MEETING ON SPENT FUEL MANAGEMENT.	RW	1570.00	MULTIPLE CITIES - BARNWOOD AND HINKLEY POINT. CONTRACTOR FROM PNL IS US TECHNICAL REP.
RW-32	2	HINKLEY POINT	UK	02/19/86 02/21/86	EPSTEIN, J.	TOUR REACTOR.	RW		MULTIPLE CITIES - BARNWOOD AND HINKLEY POINT. CONTRACTOR FROM PNL IS US TECHNICAL REP.
RW-40	1	VIENNA	AUSTRIA	02/09/86 02/15/86	COOLEY, C.	REPRESENT US AT TECHNICAL REVIEW COMMITTEE MEETING ON UNDERGROUND WASTE DISPOSAL.	RW	2344.00	
RW-43	4	PARIS	FRANCE	12/04/85 12/07/85	COOLEY, C.	ATTEND RADIOACTIVE WASTE MANAGEMENT MEETING.	RW	2700.00	MULTIPLE COUNTRIES - FRANCE AND NETHERLANDS.
RW-43	4	AMSTERDAM	NETHERLANDS	12/07/85 12/11/85	COOLEY, C.	DISCUSS BILATERAL AGREEMENT ON WASTE MANAGEMENT.	RW		MULTIPLE COUNTRIES - FRANCE AND NETHERLANDS.
						TOTAL		11000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE CE-			CONSERVATION AND RENEWABLE ENERGY						
CE-10	4	PARIS	FRANCE	11/18/85 11/20/85	STREB, A.	ATTEND MEETING OF THE IEA WORKING PARTY ON END-USE TECHNOLOGIES.	CE	1815.00	
CE-112	3	LEUVEN	BELGIUM	10/30/85 10/31/85	RYAN, J.	PARTICIPATE IN EXECUTIVE COMMITTEE MEETING FOR IEA HEAT PUMP CENTER.	CE	1750.00	MULTIPLE COUNTRIES - BELGIUM, FRANCE, AND NETHERLANDS.
CE-112	3	LYON	FRANCE	11/01/85 11/03/85	RYAN, J.	VISIT RESEARCH LABS FOR DISCUSSIONS ON ADVANCED HEAT PUMPS.	CE		MULTIPLE COUNTRIES - BELGIUM, FRANCE, AND NETHERLANDS.
CE-112	3	APELDOORN	NETHERLANDS	11/04/85 11/07/85	RYAN, J.	PARTICIPATE IN IEA ADVANCED HEAT PUMPS MEETINGS.	CE		MULTIPLE COUNTRIES - BELGIUM, FRANCE, AND NETHERLANDS.
CE-116	4	ROME	ITALY	11/06/85 11/10/85	COLLINS, F.	DISCUSS ACTIVITIES BEING PERFORMED UNDER ANNEX I OF IEA AGREEMENT ON DISTRICT HEATING.	CE	2400.00	
CE-12	1	HARWELL	UK	10/20/85 10/21/85	DEMETROPS, J.	DISCUSS STATUS OF US/UK COOPERATIVE R&D INITIATIVES ON ENERGY TECHNOLOGY.	CE	1774.00	
CE-12	1	LONDON	UK	10/21/85 10/26/85	DEMETROPS, J.	PARTICIPATE IN IEA EXECUTIVE COMMITTEE MEETING ON PULP AND PAPER. MEET WITH OFFICIALS ON UK PAPER INDUSTRY.	CE		
CE-111	6	BERLIN	FRG	12/12/85 12/14/85	SMITH, J.	ATTEND THE EIGHTEENTH SEMI-ANNUAL MEETING OF THE IEA EXECUTIVE COMMITTEE ON ENERGY CONSERVATION IN BUILDINGS AND COMMUNITY SYSTEMS.	CE	1850.00	
CE-14	3	IJMUIDEN	NETHERLANDS	10/15/85 10/16/85	BROGAN, J.	RE-EXAMINE THE STATUS OF RESEARCH AND DEVELOPMENT IN SELECTED CONSERVATION TECHNOLOGIES.	CE	4772.00	MULTIPLE COUNTRIES AND CITIES - NETHERLANDS, UK, AND FRANCE.
CE-14	3	EINDHOVEN	NETHERLANDS	10/16/85 10/17/85	BROGAN, J.	PARTICIPATE IN REVIEW OF CONSERVATION TECHNOLOGIES RESEARCH CONDUCTED AT PHILIPS RESEARCH LABORATORIES.	CE		MULTIPLE COUNTRIES AND CITIES - NETHERLANDS, UK, AND FRANCE.
CE-14	3	LONDON	UK	10/18/85 10/21/85	BROGAN, J.	REVIEW COMBUSTION RESEARCH BEING CONDUCTED UNDER IEA AGREEMENT.	CE		MULTIPLE COUNTRIES AND CITIES - NETHERLANDS, UK, AND FRANCE.
CE-14	3	[illegible]	UK	10/21/85 10/23/85	BROGAN, J.	ATTEND MEETING ON IEA COMBUSTION RESEARCH.	CE		MULTIPLE COUNTRIES AND CITIES - NETHERLANDS, UK, AND FRANCE.
CE-14	3	PARIS	FRANCE	10/24/85 10/27/85	BROGAN, J.	VISIT WITH OFFICIALS FROM RESEARCH INSTITUTES TO DISCUSS TRIBOLOGY AND COATING RESEARCH.	CE		MULTIPLE COUNTRIES AND CITIES - NETHERLANDS, UK, AND FRANCE.
CE-14	4	PARIS	FRANCE	10/12/85 10/14/85	GUREVICH, M.	ATTEND IEA EXECUTIVE COMMITTEE MEETING ON HYDROGEN. DISCUSS CONTRIBUTIONS OF EACH COUNTRY, REVISION OF ANNEX IV, AND ADOPTION OF NEW ANNEX VIII.	CE	2350.00	MULTIPLE COUNTRIES AND CITIES - FRANCE AND UK.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			CONSERVATION AND RENEWABLE ENERGY						
CE-14	4	MAUREPAS	FRANCE	10/14/85 10/15/85	GUREVICH, M.	VISIT TECHNIGAS TO DISCUSS LINER TECHNOLOGY FOR ROCKWELL THERMAL STORAGE CONCEPT.	CE		MULTIPLE COUNTRIES AND CITIES - FRANCE AND UK.
CE-14	4	RUNCORN	UK	10/15/85 10/18/85	GUREVICH, M.	REVIEW RESEARCH SPONSORED BY DOE IN SODIUM-SULFUR BATTERIES.	CE		MULTIPLE COUNTRIES AND CITIES - FRANCE AND UK.
CE-15	1	LONDON	UK	02/26/86 02/27/86	FAIRBANKS, J.	DISCUSS UK'S ADIABATIC DIESEL PROGRAM.	CE	2500.00	MULTIPLE COUNTRIES - FRG, UK, AND IRELAND.
CE-15	1	DUBLIN	IRELAND	02/27/86 02/28/86	FAIRBANKS, J.	MEET WITH PROF. TIMONEY, U. OF DUBLIN, TO DISCUSS HIS ADVANCED DIESEL CONCEPT AND EUROPEAN R&D.	CE		MULTIPLE COUNTRIES - FRG, UK, AND IRELAND.
CE-15	1	PARIS	FRANCE	02/13/86 02/19/86	FAIRBANKS, J.	PARTICIPATE IN COORDINATION COMMITTEE FOR MULTILATERAL EXPORT CONTROLS MEETING. DISCUSS CERAMIC MATERIALS FOR DIESELS.	CE		MULTIPLE COUNTRIES - FRG, UK, AND IRELAND.
CE-15	1	MUNICH	FRG	02/19/86 02/23/86	FAIRBANKS, J.	MEET WITH INDUSTRY OFFICIALS TO DISCUSS USE OF CERAMICS IN ENGINES MANUFACTURED BY FICHT ENGINE COMPANY.	CE		MULTIPLE COUNTRIES - FRG, UK, AND IRELAND.
CE-15	1	HARWELL	UK	02/23/86 02/26/86	FAIRBANKS, J.	DISCUSS INSULATIVE AND WEAR RESISTANT COATINGS FOR DIESEL (HUDGY), ADIABATIC DIESEL (BATH), AND LOW FRICTION, HIGH TEMPERATURE MATERIALS (HARWELL).	CE		MULTIPLE COUNTRIES - FRG, UK, AND IRELAND.
CE-151	1	TOKYO	JAPAN	11/17/85 11/24/85	ECKLUND, E.	EXCHANGE PROGRAM INFORMATION ON ALCOHOL FUELS FOR TRANSPORTATION. [illegible] SEMINARS ON ALCOHOL FUELS. VISIT ENGINE MANUFACTURERS.	DOT/CE	0.00	FUNDED BY TRANSPORTATION DEPT.
CE-231	1	MUNICH	FRG	11/07/85 11/10/85	FEDORUK, M.	ATTEND THE MEETING OF THE INTERNATIONAL ENERGY AGENCY ANNEX ON "ENERGY MANAGEMENT IN HOSPITALS."	CE	1360.00	
CE-30	4	PARIS	FRANCE	10/13/85 10/17/85	SAN MARTIN, R.	REPRESENT DOE AT THE IEA RENEWABLE ENERGY WORKING PARTY AND EXECUTIVE COMMITTEE CHAIRMAN'S MEETINGS. CONSULT WITH IEA STAFF.	CE	3267.00	MULTIPLE COUNTRIES - FRANCE AND BELGIUM.
CE-30	4	BRUSSELS	BELGIUM	10/17/85 10/19/85	SAN MARTIN, R.	MEET WITH EUROPEAN ECONOMIC COMMISSION ON COLLABORATION IN SOLAR AND GEOTHERMAL ENERGY.	CE		MULTIPLE COUNTRIES - FRANCE AND BELGIUM.
CE-30	5	PARIS	FRANCE	10/13/85 10/17/85	MOORE, K.	PROVIDE SUPPORT TO RAS REPRESENTING DOE AT IEA RENEWABLE ENERGY WORKING PARTY AND EXECUTIVE COMMITTEE CHAIRMAN'S MEETINGS. CONSULT WITH IEA STAFF.	CE	3267.00	MULTIPLE COUNTRIES - FRANCE AND BELGIUM.
CE-30	5	BRUSSELS	BELGIUM	10/17/85 10/19/85	MOORE, K.	MEET WITH EUROPEAN ECONOMIC COMMISSION ON COLLABORATION IN SOLAR AND GEOTHERMAL ENERGY.	CE		MULTIPLE COUNTRIES - FRANCE AND BELGIUM.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

CONSERVATION AND RENEWABLE ENERGY

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
CE-31	4	COPENHAGEN	DENMARK	10/06/85 10/07/85	MORSE, F.	REVIEW STATUS OF CRITICAL SUBTASKS IN TASKS VIII AND II OF IEA SOLAR HEATING AND COOLING AGREEMENT.	CE	3111.00	MULTIPLE COUNTRIES AND CITIES - DENMARK, SWEDEN, AND FRANCE.
CE-31	4	STOCKHOLM	SWEDEN	10/07/85 10/14/85	MORSE, F.	CHAIR PARTS OF AND REPRESENT US AT MEETINGS OF THE IEA SOLAR HEATING AND COOLING EXECUTIVE COMMITTEE.	CE		MULTIPLE COUNTRIES AND CITIES - DENMARK, SWEDEN, AND FRANCE.
CE-31	4	NICE	FRANCE	10/14/85 10/16/85	MORSE, F.	RESOLVE ISSUES PERTAINING TO US-FRANCE WORKSHOP SERIES ON INNOVATIONS IN THE USE OF SOLAR ENERGY AND INCREASED ENERGY EFFICIENCY IN BUILDINGS.	CE		MULTIPLE COUNTRIES AND CITIES - DENMARK, SWEDEN, AND FRANCE.
CE-31	4	PARIS	FRANCE	10/16/85 10/18/85	MORSE, F.	MEET WITH IEA OFFICIALS TO REVIEW STATUS OF THE COMPREHENSIVE REVIEW OF RENEWABLE SOURCES OF ENERGY.	CE		MULTIPLE COUNTRIES AND CITIES - DENMARK, SWEDEN, AND FRANCE.
CE-32	2	TOKYO	JAPAN	01/19/86 01/31/86	LANDGREBE, A.	ATTEND FIRST IAE INT'L SYMPOSIUM ON FUEL CELLS & ADVANCED BATTERIES. VISIT DEVELOPERS, LABS, & GOVT OFFICES TO ASSESS STATUS OF ADVANCED BATTERIES.	CE	3000.00	MULTIPLE CITIES - TOKYO AND OSAKA.
CE-32	2	OSAKA	JAPAN	01/31/86 02/03/86	LANDGREBE, A	VISIT DEVELOPERS TO DISCUSS STATUS OF DEVELOPMENT OF ADVANCED BATTERIES.	CE		MULTIPLE CITIES - TOKYO AND OSAKA.
CE-32	2	TOKYO	JAPAN	02/03/86 02/05/86	LANDGREBE, A.	MEET WITH EMBASSY OFFICIALS. VISIT DEVELOPER TO DISCUSS STATUS OF DEVELOPMENT OF ADVANCED BATTERIES.	CE		MULTIPLE CITIES - TOKYO AND OSAKA.
CE-323	4	PARIS	FRANCE	10/06/85 10/08/85	BRESEE, J.	MEET WITH IEA ON EXTENSION OF HOT DRY ROCK AGREEMENT.	CE	3051.00	MULTIPLE COUNTRIES AND CITIES - BELGIUM AND FRANCE. WILL BE IN PARIS ON TWO DIFFERENT PERIODS.
CE-323	4	BRUSSELS	BELGIUM	10/09/85 10/11/85	BRESEE, J.	PARTICIPATE IN THE US/EEC WORKSHOP ON HOT DRY ROCK.	CE		MULTIPLE COUNTRIES AND CITIES - BELGIUM AND FRANCE. WILL BE IN PARIS ON TWO DIFFERENT PERIODS.
CE-323	4	PARIS	FRANCE	10/11/85 10/18/85	BRESEE, J.	ATTEND MEETING OF IEA COMMITTEE CHAIRMEN AND WORKING PARTY ON RENEWABLE ENERGY. DISCUSS HOT DRY ROCK PROJECTS.	CE		MULTIPLE COUNTRIES AND CITIES - BELGIUM AND FRANCE. WILL BE IN PARIS ON TWO DIFFERENT PERIODS.
CE-33	2	LONDON	UK	03/23/86 03/24/86	MORSE, F.	REVIEW STATUS OF PASSIVE SOLAR COLLABORATION UNDER THE US-UK BILATERAL ENERGY AGREEMENT.	CE	2212.00	MULTIPLE COUNTRIES - UK AND FRANCE. DATES CHANGED FROM JANUARY.
CE-33	2	PARIS	FRANCE	03/24/86 03/29/86	MORSE, F.	CHAIR IEA REVIEW ADVISORY BOARD ORGANIZED TO GUIDE THE PREPARATION OF A COMPREHENSIVE REVIEW OF RENEWABLE SOURCES OF ENERGY. MEET WITH IEA SECRETARIAT.	CE		MULTIPLE COUNTRIES - UK AND FRANCE. DATES CHANGED FROM JANUARY.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			CONSERVATION AND RENEWABLE ENERGY						
CE-341	1	ROTORUA	NEW ZEALAND	03/02/86 03/09/86	O'CONNELL, R.	PARTICIPATE IN THE SCHEDULED IEA/FOREST ENERGY PROGRAM GROUP C MEETING.	CE	2302.00	
CE-351	1	BRUSSELS	BELGIUM	03/12/86 03/14/86	ANCONA, D.	ATTEND MEETING OF THE SCIENTIFIC PROGRAM PLANNING COMMITTEE FOR EUROPEAN WIND ENERGY ASSOCIATION CONFERENCE.	CE	2616.00	MULTIPLE COUNTRIES - BELGIUM, NETHERLANDS, AND SWEDEN.
CE-351	1	MEDEMBLIK	NETHERLANDS	03/14/86 03/16/86	ANCONA, D.	VISIT 1 MW EXPERIMENTAL DUTCH NEWECS-45 TURBINE.	CE		MULTIPLE COUNTRIES - BELGIUM, NETHERLANDS, AND SWEDEN.
CE-351	1	STOCKHOLM	SWEDEN	03/16/86 03/19/86	ANCONA, D.	CHAIR EXECUTIVE COMMITTEE MEETING OF THE IEA WIND ENERGY R&D AGREEMENT. PARTICIPATE IN THE IEA LARGE SCALE SYSTEMS AGREEMTENT MEETING.	CE		MULTIPLE COUNTRIES - BELGIUM, NETHERLANDS, AND SWEDEN.
CE-352	1	TUNIS	TUNISIA	11/18/85 11/19/85	ANNAN, R.	DISCUSS POTENTIAL COOPERATIVE AGREEMENT FOR SOLAR WATER PUMPING.	CE	1839.00	MULTIPLE COUNTRIES AND CITIES - TUNISIA, ITALY, AND FRANCE.
CE-352	1	ROME	ITALY	11/21/85 11/22/85	ANNAN, R.	DISCUSS BILATERAL US/ITALY COOPERATION IN SOLAR ELECTRIC RESEARCH.	CE		MULTIPLE COUNTRIES AND CITIES - TUNISIA, ITALY, AND FRANCE.
CE-352	1	NICE	FRANCE	11/22/85 11/27/85	ANNAN, R.	REPRESENT US AT THE THIRD JOINT MEETING OF THE PHOTOVOLTIC ENERGY PROJECT OF THE PV SUMMIT WORKING GROUP.	CE		MULTIPLE COUNTRIES AND CITIES - TUNISIA, ITALY, AND FRANCE.
CE-352	1	STRASBOURG	FRANCE	11/27/85 11/27/85	ANNAN, R.	VISIT NUCLEAR RESEARCH CENTER TO DISCUSS POLYCRYSTALLINE SILICON COLD PROCESS AND RELATED RESEARCH.	CE		MULTIPLE COUNTRIES AND CITIES - TUNISIA, ITALY, AND FRANCE.
CE-352	1	PARIS	FRANCE	11/27/85 12/01/85	ANNAN, R.	VISIT TECHNICAL INSTITUTES TO DISCUSS AMORPHOUS SILICON DEPOSITION, POLYCRYSTALLINE SILICON CASTING AND RIBBON PULLING R&D.	CE		MULTIPLE COUNTRIES AND CITIES - TUNISIA, ITALY, AND FRANCE.
						TOTAL		46000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

** TRAVEL FOR OFFICE DP- DEFENSE PROGRAMS

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
DP-12	2	BRUSSELS	BELGIUM	11/14/85 11/17/85	TABOAS, A.	PREPARE DRAFT IAEA PAPER ON "ALPHA CONTAMINATED WASTE TREATMENT".	DP	2205.00	
DP-12	2	VIENNA	AUSTRIA	11/17/85 11/23/85	TABOAS, A.	ATTEND IAEA WORKSHOP ON ALPHA CONTAMINATED WASTE TREATMENT.	DP		
DP-121	1	VIENNA	AUSTRIA	03/24/86 03/28/86	HARMON, L.	REPRESENT DOE AT A POLICY LEVEL ON STANDING ADVISORY GROUP MEETING.	DP	1694.00	
DP-123	3	VIENNA	AUSTRIA	10/26/85 11/02/85	FALCI, F.	NEGOTIATE THE SELECTION OF PAPERS AND DISCUSS OTHER ISSUES RELATED TO IAEA INT'L SYMPOSIUM FOR THE PACKAGING & TRANSPORTATION OF NUCLEAR MATERIALS.	DP	1619.00	TRAVELER IS SCIENTIFIC PROGRAMME COMMITTEE CO-CHAIRMAN.
DP-22	2	VIENNA	AUSTRIA	12/04/85 12/14/85	KATZ, M.	PARTICIPATE IN INITIATION OF JOINT PROGRAM OF DOE LABS AND IAEA SUPPORT.	STATE	0.00	FUNDED BY STATE DEPARTMENT.
DP-224	6	PARIS	FRANCE	01/19/86 01/26/86	RUDOLPH, J.	HOLD PROGRAMS DISCUSSIONS ON IMPLEMENTATION OF US-FRENCH AGREEMENT FOR COOPERATION.	DP	3410.00	
DP-33	12	TOKYO	JAPAN	10/31/85 10/31/85	DICKERSON, F.	MEET WITH INTERNATIONAL POLICY ON ICF GROUP.	DP	0.00	DATES TO BE DETERMINED. ✓ NOT TAKEN.
DP-33	13	OTTOBRUNN	FRG	11/09/85 11/09/85	BOWEN, R.	ATTEND U.S./EUROPEAN CONFLICT ANALYSIS PROJECT (ECAP) STEERING GROUP MEETING.	DP	1006.00	
DP-33	13	OTTOBRUNN	FRG	11/04/85 11/07/85	TORRES, J.	ATTEND U.S./EUROPEAN CONFLICT ANALYSIS PROJECT (ECAP) STEERING GROUP MEETING.	DP	1255.00	
DP-33	14	BUENOS AIRES	ARGENTINA	12/07/85 12/10/85	THORNE, C.	PARTICIPATE IN BILATERAL DISCUSSIONS ON NONPROLIFERATION ISSUES.	DP	3101.00	MULTIPLE COUNTRIES AND CITIES - ARGENTINA AND BRAZIL. MEMBER OF US DELEGATION HEADED BY STATE DEPT.
DP-33	14	RIO DE JANEIRO	BRAZIL	12/10/85 12/11/85	THORNE, C.	PARTICIPATE IN BILATERAL DISCUSSIONS ON NONPROLIFERATION ISSUES.	DP		MULTIPLE COUNTRIES AND CITIES - ARGENTINA AND BRAZIL. MEMBER OF US DELEGATION HEADED BY STATE DEPT.
DP-33	14	BRASILIA	BRAZIL	12/11/85 12/11/85	THORNE, C.	PARTICIPATE IN BILATERAL DISCUSSIONS ON NONPROLIFERATION ISSUES.	DP		MULTIPLE COUNTRIES AND CITIES - ARGENTINA AND BRAZIL. MEMBER OF US DELEGATION HEADED BY STATE DEPT.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

DEFENSE PROGRAMS

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
DP-33	20	OTTAWA	CANADA	01/27/86 01/29/86	DICKERSON, G.	PARTICIPATE AS MEMBER OF US BRIEFING TEAM ON ARMS CONTROL MATTERS.	DP	476.00	
DP-33	21	LONDON	UK	03/31/86 03/31/86	DICKERSON, F.	ATTEND MEETING ON CEPHEUS.	DP	0.00	DATES TO BE DETERMINED. RESCHEDULED.
DP-331	1	LONDON	UK	10/16/85 10/18/85	EWING, R.	PARTICIPATE IN THE FIRST IEA STRATEGIC DEFENSE WORKING GROUP.	DP	1514.00	
DP-331	4	TADLEY	UK	03/10/86 03/11/86	EWING, R.	PARTICIPATE IN DISCUSSION ON UTILIZATION OF RSTN.	DP	2100.00	MULTIPLE COUNTRIES - UK AND DENMARK.
DP-332	7	PARIS	FRANCE	01/11/86 01/25/86	ROONEY, J.	PARTICIPATE IN COCOM EXPORT CONTROL NEGOTIATIONS OF INTERNATIONAL ATOMIC ENERGY LIST.	DP	2700.00	
DP-332	8	PARIS	FRANCE	02/01/86 02/09/86	FOX, E.	PARTICIPATE IN COCOM FALL LIST REVIEW.	DP	2741.00	
DP-332	9	VIENNA	AUSTRIA	02/25/86 02/27/86	THORNE, C.	ATTEND MEETING OF THE ZANGGER COMMITTEE. HOLD INFORMAL DISCUSSIONS WITH UK AND USSR OFFICIALS ON NUCLEAR EXPORT ISSUES.	DP	2160.00	
DP-332	10	VIENNA	AUSTRIA	02/25/86 02/27/86	SIEBERT, A.	ATTEND MEETING OF THE ZANGGER COMMITTEE. HOLD INFORMAL DISCUSSIONS WITH THE UK AND USSR ON NUCLEAR EXPORT CONTROL ISSUES.	DP	2160.00	
DP-342	10	VIENNA	AUSTRIA	10/12/85 10/17/85	BRENNER, L.	ATTEND MEETING WITH IAEA OFFICIALS TO IDENTIFY REQUIRED TECH TRANSFER RELATED TO CENTRIFUGE AND OTHER ENRICHMENT PLANT SAFEGUARDS DEVELOPED BY US.	DP	1621.00	MULTIPLE CITIES - VIENNA AND SEIBERSDORF.
DP-342	10	SEIBERSDORF	AUSTRIA	10/17/85 10/18/85	BRENNER, L.	ATTEND MEETING WITH IAEA OFFICIALS TO IDENTIFY REQUIRED TECH TRANSFER RELATED TO CENTRIFUGE & OTHER ENRICHMENT PLANT SAFEGUARDS.	DP		MULTIPLE CITIES - VIENNA AND SEIBERSDORF.
DP-342	11	VIENNA	AUSTRIA	10/28/85 11/01/85	BARTELS, W.	PARTICIPATE IN ANNUAL MEETING AT IAEA HEADQUARTERS TO PLAN FOR CY 1986 ACTIVITIES OF THE US PROGRAM OF TECHNICAL SUPPORT FOR IAEA SAFEGUARDS.	DP	1529.00	
DP-342	12	NETHERLANDS	FRG	11/02/85 11/09/85	MYERS, D.	CONDUCT PHYSICAL SECURITY REVIEW.	DP	1850.00	
DP-342	13	LONDON	UK	12/02/85 12/03/85	JOHNSON, D.	DISCUSS SAFEGUARDS BILATERALS.	DP	2000.00	MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND LUXEMBOURG.
DP-342	13	PARIS	FRANCE	12/03/85 12/07/85	JOHNSON, D.	DISCUSS SAFEGUARDS BILATERALS.	DP		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND LUXEMBOURG.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			DEFENSE PROGRAMS						
DP-342	13	BONN	FRG	12/07/85 12/09/85	JOHNSON, O.	DISCUSS SAFEGUARDS BILATERALS.	DP		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND LUXEMBOURG.
DP-342	13	LUXEMBOURG	LUXEMBOURG	12/09/85 12/10/85	JOHNSON, O.	DISCUSS SAFEGUARDS BILATERALS.	DP		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND LUXEMBOURG.
DP-342	14	MANILA	PHILIPPINES	12/14/85 12/22/85	CRANE, J.	PARTICIPATE IN PHYSICAL SECURITY DISCUSSIONS.	DP	2850.00	MEMBER OF STATE DEPT TEAM.
DP-342	15	VIENNA	AUSTRIA	02/02/86 02/07/86	JOHNSON, O.	ATTEND MEETING ON CONTAINMENT/SURVEILLANCE.	DP	2000.00	DATES TO BE DETERMINED.
						TOTAL		40000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE EI-			ENERGY INFORMATION ADMINISTRATION						
EI-442	4	MADRID	SPAIN	10/22/85 10/25/85	D'ANDREA, L.	ATTEND LP-GAS SYMPOSIUM.	STATE	0.00	FUNDED BY STATE DEPARTMENT. MULTIPLE COUNTRIES - SPAIN AND SWITZERLAND.
EI-442	4	GENEVA	SWITZERLAND	10/25/85 11/01/85	D'ANDREA, L.	ATTEND ANNUAL PLENARY SESSION OF GROUP OF EXPERTS ON NATURAL GAS RESOURCES.	STATE		FUNDED BY STATE DEPARTMENT. MULTIPLE COUNTRIES - SPAIN AND SWITZERLAND.
EI-53	3	PARIS	FRANCE	03/02/86 03/06/86	CLARK, R.	REPRESENT US AT THE MEETING OF THE NUCLEAR ENERGY AGENCY'S URANIUM GROUP.	EI	1171.00	REPLACES NIKODEM (EI-53).
EI-631	3	BRUSSELS	BELGIUM	11/24/85 11/27/85	DEMOUY, L.	DEVELOP AN ENERGY DATA BASE, DEVELOP AN AUTOMATED PROCESSING CAPABILITY, AND PREPARE FOR NATO TRAINING AS A MEMBER OF DATA WORKING GROUP TO NATO/PPC.	EI	1572.00	
EI-632	1	PARIS	FRANCE	11/10/85 11/14/85	BROOKS, H.	WORK WITH IEA OFFICIALS ON THE DATA REVIEW OF US SUBMISSION TO IEA/SLT.	EI	2204.00	
						TOTAL		5000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

** TRAVEL FOR OFFICE ER- ENERGY RESEARCH

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
ER-1	6	ROME	ITALY	01/11/86 01/14/86	TRIVELPIECE, A.	DISCUSS POLICIES AND TECHNICAL PROGRAMS WITH POTENTIAL FOR TRILATERAL OR MULTILATERAL COOPERATION.	ER	2901.00	
ER-1	6	GARCHING	FRG	01/14/86 01/18/86	TRIVELPIECE, A.	CO-CHAIR ANNUAL MEETING OF SUMMIT WORKING GROUP IN FUSION.	ER		
ER-1	7	ROME	ITALY	01/11/86 01/14/86	SMITH, M.	DISCUSS POLICIES AND TECHNICAL PROGRAMS WITH POTENTIAL FOR TRILATERAL OR MULTILATERAL COOPERATION.	ER	2905.00	MULTIPLE COUNTRIES - FRG AND ITALY.
ER-1	7	GARCHING	FRG	01/14/86 01/18/86	SMITH, M.	ACT AS SECRETARIAT FOR ANNUAL MEETING OF SUMMIT WORKING GROUP IN FUSION.	ER		MULTIPLE COUNTRIES - FRG AND ITALY.
ER-1	8	HAMBURG	FRG	01/29/86 02/01/86	TRIVELPIECE, A.	CHAIR ANNUAL MEETING OF SUMMIT WORKING GROUP IN HIGH ENERGY PHYSICS.	ER	2283.00	
ER-1	9	HAMBURG	FRG	01/29/86 02/01/86	SMITH, M.	ACT AS SECRETARIAT FOR SUMMIT WORKING GROUP IN HIGH ENERGY PHYSICS.	ER	2195.00	
ER-1	10	TOKYO	JAPAN	02/27/86 03/01/86	TRIVELPIECE, A.	PARTICIPATE AS CO-CHAIRMAN OF DISCUSSIONS ON POSSIBLE TECHNICAL ADVANTAGES OFFERED BY THE REAGAN-GORBACHEV INITIATIVE IN FUSION ENERGY.	ER	2245.00	
ER-1	13	TOKYO	JAPAN	02/27/86 03/01/86	SMITH, M.	PARTICIPATE IN THE MEETING OF THE SUMMIT WORKING GROUP IN CONTROLLED THERMONUCLEAR FUSION AS FOLLOW-UP TO MEETING IN MUNICH, FRG.	ER	2075.00	
ER-1	14	GENEVA	SWITZERLAND	03/03/86 04/05/86	TRIVELPIECE, A.	PARTICIPATE AS US DELEGATE FOR DISCUSSIONS OF BILATERAL FUSION COOPERATION.	ER	2574.00	
ER-12	2	VILLACH	AUSTRIA	10/08/85 10/21/85	KOOMANOFF, F.	LEAD US DELEGATION TO THE WORLD METEROLOGICAL ORGANIZATION/UNITED NATIONS ENVIRONMENT PROGRAMME/INT'L COUNCIL OF SCIENTIFIC UNIONS CO2 ASSESSMENT CONF.	ER	2135.00	
ER-142	2	SYDNEY	AUSTRALIA	10/26/85 11/05/85	STEVENSON, F.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE.	ER	3303.00	MULTIPLE CITIES - SYDNEY, CANBERRA, AND MELBOURNE. MAJOR DOE CONFERENCE IN SYDNEY.
ER-142	2	CANBERRA	AUSTRALIA	11/05/85 11/06/85	STEVENSON, F.	VISIT ACADEMIC INSTITUTIONS CONDUCTING ENERGY RESEARCH IN THE AREAS OF CATALYSIS AND COAL CHEMISTRY.	ER		MULTIPLE CITIES - SYDNEY, CANBERRA, AND MELBOURNE. MAJOR DOE CONFERENCE IN SYDNEY.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-142	2	MELBOURNE	AUSTRALIA	11/06/85 11/11/85	STEVENSON, F.	VISIT ACADEMIC INSTITUTIONS CONDUCTING ENERGY RESEARCH IN THE AREAS OF CATALYSIS AND COAL CHEMISTRY.	ER		MULTIPLE CITIES - SYDNEY, CANBERRA, AND MELBOURNE. MAJOR DOE CONFERENCE IN SYDNEY.
ER-2	1	LONDON	UK	11/17/85 11/18/85	DECKER, J.	MEET WITH REPRESENTATIVES TO IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT (CRD) TO GET ACQUAINTED AND OBTAIN VIEWS.	ER	2486.00	MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN. TRAVELER NOMINATED AS CHAIRMAN OF IEA/CRD.
ER-2	1	PARIS	FRANCE	11/18/85 11/19/85	DECKER, J.	MEET WITH IEA SECRETRIAT EMPLOYEES TO GET ACQUAINTED.	ER		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN. TRAVELER NOMINATED AS CHAIRMAN OF IEA/CRD.
ER-2	1	COLOGNE	FRG	11/19/85 11/20/85	DECKER, J.	MEET WITH REPRESENTATIVES TO IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT (CRD) TO GET ACQUAINTED AND OBTAIN VIEWS.	ER		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN. TRAVELER NOMINATED AS CHAIRMAN OF IEA/CRD.
ER-2	1	STOCKHOLM	SWEDEN	11/20/85 11/21/85	DECKER, J.	MEET WITH REPRESENTATIVES TO IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT (CRD) TO GET ACQUAINTED AND OBTAIN VIEWS.	ER		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN. TRAVELER NOMINATED AS CHAIRMAN OF IEA/CRD.
ER-20	2	HAMBURG	FRG	11/13/85 11/15/85	WALLENMEYER, W.	VIST DESY LAB FOR DISCUSSIONS ON HERA PROJECT.	ER/USSR	2213.00	MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. APPROVED DELEGATION CONSISTS OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.
ER-20	2	HELSINKI	FINLAND	11/15/85 11/16/85	WALLENMEYER, W.	ATTEND US CAUCUS FOR US-USSR JOINT COORDINATING COMMITTEE FOR RESEARCH ON THE FUNDAMENTAL PROPERTIES OF MATTER.	ER/USSR		MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. APPROVED DELEGATION CONSISTS OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.
ER-20	2	LENINGRAD	USSR	11/16/85 11/19/85	WALLENMEYER, W.	PARTICIPATE IN THE EIGHTH MEETING OF THE US-USSR JOINT COORDINATING COMMITTEE ON THE FUNDAMENTAL PROPERTIES OF MATTER.	ER/USSR		MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. APPROVED DELEGATION CONSISTS OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.
ER-20	2	MOSCOW	USSR	11/19/85 11/23/85	WALLENMEYER, W.	VISIT HIGH ENERGY PHYSICS LABS.	ER/USSR		MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. APPROVED DELEGATION CONSISTS OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-22	1	MOSCOW	USSR	10/15/85 10/19/85	WALLENMEYER, W.	ATTEND US-USSR JOINT COORDINATING COMMITTEE AND DISCUSS FUNDAMENTAL PROPERTIES OF MATTER.	ER	1900.00	
ER-22	4	GENEVA	SWITZERLAND	01/31/86 01/31/86	LEWIS, J.	PARTICIPATE IN REVIEW OF LEP-3 AT CERN LAB.	ER	1700.00	
ER-22	5	HAMBURG	FRG	01/29/86 01/31/86	WALLENMEYER, W.	PARTICIPATE IN SUMMIT WORKING GROUP ON HIGH ENERGY PHYSICS.	ER	1700.00	
ER-22	8	GENEVA	SWITZERLAND	03/03/86 03/08/86	FRICKEN, R.	PARTICIPATE AS SENIOR REPRESENTATVE OF DIV. OF HIGH ENERGY PHYSICS IN DOE LEP-3 DETECTOR REVIEW.	ER	1800.00	SENIOR DIVISION OF HIGH ENERGY PHYSICS REPRESENTATIVE FOR DOE REVIEW COMMITTEE TEAM OF SIX DOE EMPLOYEES AND FOUR TECHNICAL CONTRACTORS.
ER-22	9	GENEVA	SWITZERLAND	03/03/86 03/09/86	LEWIS, J.	PARTICIPATE AS REPORT COORDINATOR/EDITOR IN DOE LEP-3 DETECTOR REVIEW COVERING TECHNICAL, COST, SCHEDULE, AND MANAGEMENT ASPECTS.	ER	1800.00	MEMBER OF DOE REVIEW COMMITTEE TEAM OF SIX DOE EMPLOYEES AND FOUR CONTRACTORS.
ER-221	3	MOSCOW	USSR	10/15/85 10/19/85	HILDEBRAND, B.	ATTEND US-USSR JOINT COORDINATING COMMITTEE AND DISCUSS FUNDAMENTAL PROPERTIES OF MATTER.	ER	1900.00	
ER-221	4	HAMBURG	FRG	11/13/85 11/15/85	HILDEBRAND, B.	VISIT DESY LAB FOR DISCUSSIONS ON HERA PROJECT.	ER/USSR	2213.00	MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. DELEGATION OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.
ER-221	4	HELSINKI	FINLAND	11/15/85 11/16/85	HILDEBRAND, B.	ATTEND US CAUCUS FOR US-USSR JOINT COORDINATING COMMITTEE FOR RESEARCH ON THE FUNDAMENTAL PROPERTIES OF MATTER.	ER/USSR		MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. DELEGATION OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.
ER-221	4	LENINGRAD	USSR	11/16/85 11/20/85	HILDEBRAND, B.	PARTICIPATE IN THE EIGHTH MEETING OF THE US-USSR JOINT COORDINATING COMMITTEE FOR RESEARCH ON THE FUNDAMENTAL PROPERTIES OF MATTER.	ER/USSR		MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. DELEGATION OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.
ER-221	4	MOSCOW	USSR	11/20/85 11/23/85	HILDEBRAND, B.	VISIT HIGH ENERGY PHYSICS LABS.	ER/USSR		MULTIPLE COUNTRIES AND CITIES - FRG, FINLAND, & USSR. DELEGATION OF TWO DOE EMPLOYEES AND SIX CONTRACTORS TO LENINGRAD.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-221	9	GENEVA	SWITZERLAND	03/03/86 03/08/86	WILLIAMS, P.	PARTICIPATE AS PROGRAM OFFICER IN DOE REVIEW COVERING TECHNICAL, COST, SCHEDULE, AND MANAGEMENT ASPECTS OF LEP-3 DETECTOR.	ER	1800.00	MEMBER OF DOE REVIEW COMMITTEE TEAM OF SIX DOE EMPLOYEES AND FOUR CONTRACTORS.
ER-221	10	LES ARCS	FRANCE	03/16/86 03/22/86	MANDULA, J.	ATTEND AND PRESENT TALK AT THE XII RENCONTRE DE MORIOND WORKSHOP ON STRONG INTERACTIONS AND NON-PERBATIVE METHODS.	ER	4121.00	MULTIPLE COUNTRIES - FRANCE, UK, AND BELGIUM. APPROVED CEILING OF THIRTY TRAVELERS FOR DOE MAJOR INT'L CONFERENCE IN FRANCE.
ER-221	10	SOUTHAMPTON	UK	03/23/86 03/26/86	MANDULA, J.	DISCUSS RESULTS OF ONGOING COLLABORATIVE RESEARCH AND A PAPER IN PREPARATION WITH COLLABORATORS AND TO PLAN FUTURE WORK. GIVE A SEMINAR.	ER		MULTIPLE COUNTRIES - FRANCE, UK, AND BELGIUM. APPROVED CEILING OF THIRTY TRAVELERS FOR DOE MAJOR INT'L CONFERENCE IN FRANCE.
ER-221	10	LOUVAIN	BELGIUM	03/27/86 03/29/86	MANDULA, J.	DISCUSS THE POSSIBILITIES AND DIRECTIONS OF FUTURE RESEARCH.	ER		MULTIPLE COUNTRIES - FRANCE, UK, AND BELGIUM. APPROVED CEILING OF THIRTY TRAVELERS FOR DOE MAJOR INT'L CONFERENCE IN FRANCE.
ER-23	2	PARIS	FRANCE	11/18/85 11/20/85	WHETSTONE, S.	PARTICIPATE IN NEA NUCLEAR DATA COMMITTEE MEETING.	ER	2679.00	MULTIPLE COUNTRIES AND CITIES - FRANCE AND AUSTRIA.
ER-23	2	GRENOBLE	FRANCE	11/21/85 11/22/85	WHETSTONE, S.	PARTICIPATE IN NEA NUCLEAR DATA COMMITTEE MEETING.	ER		MULTIPLE COUNTRIES AND CITIES - FRANCE AND AUSTRIA.
ER-23	2	VIENNA	AUSTRIA	11/25/85 11/26/85	WHETSTONE, S.	VISIT THE PHYSICS SECTION AND THE NUCLEAR DATA SECTION OF THE IAEA.	ER		MULTIPLE COUNTRIES AND CITIES - FRANCE AND AUSTRIA.
ER-50	5	JUELICH	FRG	01/14/86 01/17/86	CLARKE, J.	PARTICIPATE IN BLUE RIBBON GROUP MEETING ON FUSION MATERIAL.	ER	2877.00	
ER-50	5	VIENNA	AUSTRIA	01/17/86 01/22/86	CLARKE, J.	ATTEND INTERNATIONAL FUSION RESEARCH COUNCIL MEETING.	ER		
ER-50	6	TOKYO	JAPAN	02/27/86 03/02/86	CLARKE, J.	ASSIST IN DELIBERATIONS WITH EUROPEAN AND JAPANESE DELEGATES IN A FOLLOW ON MEETING OF THE SUMMIT WORKING GROUP ON FUSION.	ER	2444.00	
ER-50	7	GENEVA	SWITZERLAND	03/03/86 04/05/86	CLARK, J.	PARTICIPATE AS US DELEGATE FOR DISCUSSIONS OF BILATERAL FUSION COOPERATION.	ER	2200.00	
ER-50	8	GENEVA	SWITZERLAND	03/31/86 04/05/86	CLARKE, J.	DISCUSS POSSIBLE COLLABORATION WITH SOVIET UNION IN THE AREA OF MAGNETIC FUSION ENERGY.	ER	2509.00	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-52	5	VIENNA	AUSTRIA	01/19/86 01/23/86	ROBERTS, M.	PARTICIPATE IN IAEA INTERNATIONAL FUSION RESEARCH COUNCIL MEETING.	ER	2304.00	
ER-521	2	JUELICH	FRG	11/17/85 11/19/85	KATZ, A.	PARTICIPATE IN TEXTOR EXECUTIVE COMMITTEE MEETING. DEVELOP FINAL FORM OF REVISED IEA AGREEMENT NEEDED TO EXTEND THE TEXTOR COLLABORATION TO ALT-II.	ER	1547.00	MULTIPLE COUNTRIES AND CITIES - FRG AND BELGIUM. TEAM CONSISTS OF 2 EMPLOYEES & 2 SETS OF FIVE CONTRACTORS. APPROVED TWO EMPLOYEES AND 7 CONTRACTORS.
ER-521	2	BRUSSELS	BELGIUM	11/19/85 11/20/85	KATZ, A.	VISIT CEC TO REVIEW AND DISCUSS APPROPRIATE NEXT STEPS IN US-EC COOPERATION AND THE IMPLEMENTATION OF THE EC-US BILATERAL IN MAGNETIC FUSION.	ER	1	MULTIPLE COUNTRIES AND CITIES - FRG AND BELGIUM. TEAM CONSISTS OF 2 EMPLOYEES & 2 SETS OF FIVE CONTRACTORS. APPROVED TWO EMPLOYEES AND 7 CONTRACTORS.
ER-521	2	GARCHING	FRG	11/20/85 11/23/85	KATZ, A.	PARTICIPATE AS 2ND ALTERNATE TO ASDEX EXEC COM. MTG. NEGOTIATE FIRST WORK PROGRAM AND REVIEW POLICY/PROGRAMMATIC MATTERS TO EFFECTIVELY BEGIN PROGRAM.	ER		MULTIPLE COUNTRIES AND CITIES - FRG AND BELGIUM. TEAM CONSISTS OF 2 EMPLOYEES & 2 SETS OF FIVE CONTRACTORS. APPROVED TWO EMPLOYEES AND 7 CONTRACTORS.
ER-53	2	KARLSRUHE	FRG	01/02/86 01/04/86	DOWLING, R.	DISCUSS POTENTIAL COOPERATIVE PROGRAM IN TRITIUM PROCESSING AND CONTROL TECHNOLOGY. DETERMINE POSSIBILTY OF COOPERATION IN OTHER AREAS OF FUSION TECH.	ER	2730.00	
ER-53	2	ISPRA	ITALY	01/04/86 01/06/86	DOWLING, R.	DISCUSS POTENTIAL COOPERATIVE PROGRAM IN TRITIUM SAFETY. DETERMINE STATUS AND PLANS FOR CONSTRUCTION OF A NEW TRITIUM LAB.	ER		
ER-53	2	PARIS	FRANCE	01/06/86 01/09/86	DOWLING, R.	ATTEND IEA SENIOR ADVISORY PANEL MEETING ON INTEGRATED FUSION MATERIALS RESEARCH PROGRAM AT IEA. MEET WITH DOE OECD REPRESENTATIVE.	ER		
ER-531	8	TOKYO	JAPAN	10/27/85 10/28/85	DER, V.	PARTICIPATE IN SCIENTIFIC WORKSHOP TOURS ON SUPERCONDUCTING MAGNETS.	ER	2440.00	MULTIPLE CITIES - TOKYO, TOKAI AND TSUKUBA. SIX DOE CONTRACTORS SCHEDULED TO PARTICIPATE. FIVE DOE CONTRACTORS APPROVED.
ER-531	8	TOKAI	JAPAN	10/28/85 10/31/85	DER, V.	PARTICIPATE IN JT-60 & SCIENTIFIC TOUR ON SUPERCONDUCTING MAGNETS.	ER		MULTIPLE CITIES - TOKYO, TOKAI AND TSUKUBA. SIX DOE CONTRACTORS SCHEDULED TO PARTICIPATE. FIVE DOE CONTRACTORS APPROVED.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-531	8	TSUKUBA	JAPAN	11/01/85 11/02/85	DER, V.	PARTICIPATE IN SCIENTIFIC WORKSHOP TOUR ON SUPERCONDUCTING MAGNETS.	ER		MULTIPLE CITIES - TOKYO, TOKAI AND TSUKUBA. SIX DOE CONTRACTORS SCHEDULED TO PARTICIPATE. FIVE DOE CONTRACTORS APPROVED.
ER-533	4	TOKYO	JAPAN	12/32/85 12/03/85	HAAS, G.	MEET WITH US EMBASSY ON US JAPAN TECHNOLOGY COOPERATION.	ER	2731.00	MULTIPLE CITIES - TOKYO AND TOKAI.
ER-533	4	TOKAI	JAPAN	12/03/85 12/05/85	HAAS, G.	ATTEND MEETING ON TRITIUM TECHNOLOGY/COOPERATION.	ER		MULTIPLE CITIES - TOKYO AND TOKAI.
ER-533	4	TOKYO	JAPAN	12/06/85 12/07/85	HAAS, G.	BRIEF US EMBASSY ON MEETINGS REGARDING US-JAPAN COOPERATION.	ER		MULTIPLE CITIES - TOKYO AND TOKAI.
ER-533	5	SAPPORO	JAPAN	12/04/85 12/07/85	REUTHER, T.	LEAD DELEGATION FOR JOINT PLANNING DISCUSSIONS REGARDING FISSION REACTOR IRRADIATION TESTING OF FUSION MATERIALS.	ER	2400.00	MULTIPLE CITIES - SAPPORO, TOKYO, AND TOKAI. LEAD TEAM OF THREE TECHNICAL CONTRACTORS. APPROVED BY TRAVEL BOARD.
ER-533	5	TOKAI	JAPAN	12/10/85 12/12/85	REUTHER, T.	LEAD DELEGATION FOR JOINT PLANNING DISCUSSIONS REGARDING SOLID BREEDERS FOR FUSION.	ER		MULTIPLE CITIES - SAPPORO, TOKYO, AND TOKAI. LEAD TEAM OF THREE TECHNICAL CONTRACTORS. APPROVED BY TRAVEL BOARD.
ER-533	5	OSAKA	JAPAN	12/08/85 12/07/85	REUTHER, T.	LEAD DELEGATION FOR JOINT PLANNING DISCUSSIONS REGARDING FISSION REACTOR IRRADIATION TESTING OF FUSION MATERIALS.	ER		MULTIPLE CITIES - SAPPORO, TOKYO, AND TOKAI. LEAD TEAM OF THREE TECHNICAL CONTRACTORS. APPROVED BY TRAVEL BOARD.
ER-533	7	TOKYO	JAPAN	03/04/86 03/08/86	COHEN, M.	ATTEND PRELIMINARY RTNS-II AND RTNS-II COLLABORATION REVIEW PANEL MEETINGS.	ER	2470.00	
ER-54	4	NAGOYA	JAPAN	12/01/85 12/05/85	NELSON, D.	DISCUSS POSSIBILITES FOR CLOSER US-JAPAN INTEGRATION OF RESEARCH TO DEVELOP MAGNETIC CONFINEMENT SYSTEMS.	ER	3067.00	MULTIPLE CITIES - NAGOYA AND HIROSHIMA.
ER-54	4	HIROSHIMA	JAPAN	12/05/85 12/06/85	NELSON, D.	PLAN THE MECHANISM FOR THE BROAD REVIEW OF OVERALL US-JAPAN COOPERATION IN FUSION RESEARCH.	ER		MULTIPLE CITIES - NAGOYA AND HIROSHIMA.
ER-54	5	NAGOYA	JAPAN	02/17/86 02/20/86	NELSON, D.	DISCUSS POSSIBILITIES FOR CLOSER US-JAPAN INTEGRATION OF RESEARCH TO DEVELOP MAGNETIC CONFINEMENT SYSTEMS.	ER	2705.00	MULTIPLE CITIES - NAGOYA AND TSUKUBA.
ER-54	5	TSUKUBA	JAPAN	02/21/86 02/22/86	NELSON, D.	REVIEW PROGRESS AND PROBLEMS WITH THE DATA LINK TEST BEING CONDUCTED BETWEEN THE US AND JAPAN.	ER		MULTIPLE CITIES - NAGOYA AND TSUKUBA.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-541	3	JUELICH	FRG	11/17/85 11/19/85	SADOWSKI, M.	PARTICIPATE IN TEXTOR EXEC COMM. MTG. DEVELOP FINAL FORM OF REVISED IEA AGREEMENT NEEDED TO EXTEND TEXTOR COLLABORATION TO ADVANCED LIMITER TEST-II.	ER	1190.00	
ER-542	4	NAGOYA	JAPAN	01/26/86 02/07/86	CRANDALL, D.	PARTICIPATE IN US-JAPAN WORKSHOP ON TOKAMAK PHYSICS. ATTEND US-JAPAN JOINT PLANNING COMMITTEE ON TOKAMAK PHYSICS MEETING.	ER	3691.00	
ER-55	12	JUELICH	FRG	11/17/85 11/19/85	OKTAY, E.	LEAD US PARTICIPATION IN TEXTOR EXEC COMMITTEE MTG. DEVELOP FINAL FORM OF REVISED IEA AGREEMENT NEEDED TO EXTEND TEXTOR COLLABORATION TO ALT-II.	ER	1161.00	MULTIPLE CITIES - JUELICH & GARCHING. LEAD TEAM OF 2 EMPLOYEES AND 2 SETS OF FIVE CONTRACTORS. APPROVED 2 EMPLOYEES & 7 CONTRACTORS.
ER-55	12	GARCHING	FRG	11/19/85 11/23/85	OKTAY, E.	LEAD US PARTICIPATION IN ASDEX EXEC COMMITTEE MTG. NEGOTIATE FIRST WORK PROGRAM AND REVIEW POLICY/PROGRAMMATIC MATTERS TO EFFECTIVELY BEGIN PROGRAM.	ER		MULTIPLE CITIES - JUELICH & GARCHING. LEAD TEAM OF 2 EMPLOYEES AND 2 SETS OF FIVE CONTRACTORS. APPROVED 2 EMPLOYEES & 7 CONTRACTORS.
ER-55	13	FRASCATI	ITALY	12/02/85 12/04/85	JAMES, T.	MEET WITH FRASCATI TOKAMAK-UPGRADE PROJECT MANAGEMENT TEAM. DISCUSS THE CURRENT STATUS, COST SCHEDULES, & PROBLEMS ON JET EXTENSION TO FULL	ER	2166.00	MULTIPLE COUNTRIES AND CITIES - ITALY AND UK.
ER-55	13	MILAN	ITALY	12/05/85 12/08/85	JAMES, T.	MEET WITH OFFICIALS ON EUROPEAN DESIGN OF IGNITOR.	ER		MULTIPLE COUNTRIES AND CITIES - ITALY AND UK.
ER-55	13	GENOA	ITALY	12/09/85 12/10/85	JAMES, T.	DISCUSS PAST PERFORMANCE AND ABILITY TO SUPPLY COMPONENTS FOR A POSSIBLE US IGNITION EXPERIMENT.	ER		MULTIPLE COUNTRIES AND CITIES - ITALY AND UK.
ER-55	13	CULHAM	UK	12/10/85 12/11/85	JAMES, T.	VISIT JET CONSTRUCTION.	ER		MULTIPLE COUNTRIES AND CITIES - ITALY AND UK.
ER-55	14	GARCHING	FRG	12/11/85 12/14/85	BOLTON, C.	HEAD US DELEGATION OF IGNITION PHYSICS STUDY GROUP PHYSICISTS MEETING WITH ASDEX TEAM.	ER	1942.00	MULTIPLE COUNTRIES - FRG AND UK.
ER-55	14	CULHAM	UK	12/14/85 12/18/85	BOLTON, C.	CONDUCT DISCUSSIONS ON JET-US COLLABORATION.	ER		MULTIPLE COUNTRIES - FRG AND UK.
ER-55	15	MONTREAL	CANADA	12/04/85 12/06/85	ECKSTRAND, S	ATTEND ADVISORY COMMITTEE METTING ON TOKAMAK DE VERENNES.	ER	453.00	
ER-55	16	NAGOYA	JAPAN	01/26/86 02/06/86	OKTAY, E.	PARTICIPATE IN US-JAPAN WORKSHOP ON TOKAMAK PHYSICS. ATTEND US-JAPAN JOINT PLANNING COMMITTEE ON TOKAMAK PHYSICS MEETING.	ER	3575.00	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-55	17	LONDON	UK	03/12/86 03/13/86	OKTAY, E.	ATTEND MEETING OF THE ROYAL SOCIETY ON THE JET PROJECT AND PROSPECT FOR CONTROLLED NUCLEAR FUSION.	ER	2726.00	
ER-56	3	CULHAM	UK	10/08/85 10/09/85	TURNER, J.	FOLLOW-UP ON INTIATIVES TO INCREASE INT'L COLLABORATION IN THE MAGNETIC FUSION PROGRAM.	ER	2448.00	MULTIPLE COUNTRIES AND CITIES - UK, FRG, ITALY, AND FRANCE.
ER-56	3	KARLSRUHE	FRG	10/09/85 10/10/85	TURNER, J.	FOLLOW-UP ON INTIATIVES TO INCREASE INT'L COLLABORATION IN THE MAGNETIC FUSION PROGRAM.	ER		MULTIPLE COUNTRIES AND CITIES - UK, FRG, ITALY, AND FRANCE.
ER-56	3	MILAN	ITALY	10/14/85 10/15/85	TURNER, J.	FOLLOW-UP ON INTIATIVES TO INCREASE INT'L COLLABORATION IN THE MAGNETIC FUSION PROGRAM.	ER		MULTIPLE COUNTRIES AND CITIES - UK, FRG, ITALY, AND FRANCE.
ER-56	3	FRASCATTI	ITALY	10/15/85 10/17/85	TURNER, J.	FOLLOW-UP ON INTIATIVES TO INCREASE INT'L COLLABORATION IN THE MAGNETIC FUSION PROGRAM.	ER		MULTIPLE COUNTRIES AND CITIES - UK, FRG, ITALY, AND FRANCE.
ER-56	3	CADARACHE	FRANCE	10/17/85 10/18/85	TURNER, J.	FOLLOW-UP ON INTIATIVES TO INCREASE INT'L COLLABORATION IN THE MAGNETIC FUSION PROGRAM.	ER		MULTIPLE COUNTRIES AND CITIES - UK, FRG, ITALY, AND FRANCE.
ER-56	3	PARIS	FRANCE	10/18/85 10/22/85	TURNER, J.	FOLLOW-UP ON INTIATIVES TO INCREASE INT'L COLLABORATION IN THE MAGNETIC FUSION PROGRAM.	ER		MULTIPLE COUNTRIES AND CITIES - UK, FRG, ITALY, AND FRANCE.
ER-65	1	GENEVA	SWITZERLAND	03/03/86 03/08/86	TEMPLE, L.	CHAIRS COMMITTEE REVIEW COVERING TECHNICAL, COST, SCHEDULE, AND MANAGEMENT ASPECTS OF THE LEP-3 DETECTOR INTERNATIONAL COLLABORATIVE EFFORT.	ER	1800.00	LEAD REVIEW TEAM OF SIX DOE EMPLOYEES AND FOUR TECHNICAL CONTRACTORS.
ER-65	2	GENEVA	SWITZERLAND	03/03/86 03/09/86	LEHMAN, D.	PARTICIPATE AS COST ESTIMATOR IN DOE COMMITTEE REVIEW OF LEP-3 DETECTOR INTERNATIONAL COLLABORATIVE EFFORT.	ER	1800.00	MEMBER OF REVIEW COMMITTEE TEAM OF SIX DOE EMPLOYEES AND FOUR TECHNICAL CONTRACTORS.
ER-65	3	GENEVA	SWITZERLAND	03/03/86 03/08/86	VIRTS, J.	PARTICIPATE AS ASSISTANT TO CHAIRMAN FOR DOE REVIEW COMMITTEE COVERING TECHNICAL, COST, SCHEDULE, AND MANAGEMENT ASPECTS OF LEP-3 DETECTOR PROJECT.	ER	1800.00	MEMBER OF DOE REVIEW COMMITTEE TEAM OF SIX EMPLOYEES AND FOUR CONTRACTORS.
ER-7	1	GENEVA	SWITZERLAND	03/05/86 03/07/86	CAVALLINI, J.	VISIT CERN LAB TO DISCUSS INTERNATIONAL DATA COMMUNICATION FOR ENERGY RESEARCH COLLABORATION.	ER	1924.00	
ER-71	1	TOKYO	JAPAN	03/13/86 03/14/86	THIESSEN, J.	DISCUSS POSSIBILITY OF DIMINISHING SUPPORT BY US SIDE AND US DESIRES WITH RESPECT TO PROGRAM DEVELOPMENT AT RADIATION EFFECTS RESEARCH FOUNDATION.	ER	3590.00	MULTIPLE CITIES - TOKYO, HIROSHIMA, AND NAGASAKI.
ER-71	1	HIROSHIMA	JAPAN	03/15/86 03/19/86	THIESSEN, J.	ATTEND MEETING OF US-JAPANESE OVERSIGHT COMMITTEES RE: BINATIONAL SCIENTIFIC RESEARCH EFFORTS TO REASSESS RADIATION DOSES RECEIVED BY A-BOMB SURVIVORS.	ER		MULTIPLE CITIES - TOKYO, HIROSHIMA, AND NAGASAKI.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			ENERGY RESEARCH						
ER-71	1	NAGASAKI	JAPAN	03/20/86 03/25/86	THIESSEN, J.	VISIT RERF LABORATORIES AND DISCUSS PROGRAM DEVELOPMENT AND IMPACT OF DOSE-REASSESSMENT EFFORTS.	ER		MULTIPLE CITIES - TOKYO, HIROSHIMA, AND NAGASAKI.
ER-71	2	BRUSSELS	BELGIUM	01/31/86 01/31/86	THIESSEN, J.	VISI: COMMISSION ON EUROPEAN COMMUNITIES TO DISCUSS CEC/DOE INTERACTIONS.	ER	1700.00	DATES TO BE DETERMINED.
ER-74	3	SACLAY	FRANCE	10/05/85 10/14/85	LOWDER, W.	ATTEND DOE/CEC WORKSHOP ON DOSIMETRY OF BETA PARTICLES AND LOW-ENERGY X-RAYS AND WORKSHOP ON RADIATION DAMAGE TO SKIN.	ER	1351.00	
ER-74	4	HIROSHIMA	JAPAN	03/14/86 03/19/86	LOWDER, W.	PARTICIPATE AS PROJECT MANAGER IN WORKSHOP TO CONSIDER AND APPROVE THE DOSIMETRY SYSTEM BEING INSTALLED AT THE RADIATION EFFECTS RESEARCH FOUNDATION.	ER	3087.00	
						TOTAL		118000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE EH- ENVIRONMENT, SAFETY, AND HEALTH									
EH-43	1	PARIS	FRANCE	01/27/86 02/01/86	MCNUTT, B.	MEET WITH IEA STAFF. ATTEND IEA/SLT SUBGROUP ON ENERGY CONSERVATION MEETING.	EH	2210.00	
						TOTAL		2000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE FE-			FOSSIL ENERGY						
FE-10	2	PARIS	FRANCE	10/13/85 10/16/85	WALSH, J.	MEET WITH OFFICIALS FROM IEA COAL RESEARCH SERVICE REGARDING FINANCIAL ARRANGEMENTS FOR DOE/FE COAL RESEARCH SERVICE ACCOUNT.		2700.00	
FE-10	2	LONDON	UK	10/16/85 10/19/85	WALSH, J.	DISCUSS FINANCIAL ISSUES REGARDING DOE/FE COAL RESEARCH SERVICE ACCOUNT WITH IEA COUNTERPARTS.			
FE-10	3	ROME	ITALY	12/01/85 12/07/85	WALSH, J.	HEAD FOSSIL ENERGY DELEGATION IN THE REVIEW OF THIRTEEN PROJECTS IN PROGRESS.	FE	3129.00	DELEGATION CONSISTS OF FOUR.
FE-13	4	LONDON	UK	12/10/85 12/11/85	BRAITSCH, R.	PROVIDE TECHNICAL, ECONOMIC, AND ENVIRONMENTAL EVALUATIONS FOR TECHNICAL PROGRAM COMMITTEE MEETING OF THE IEA COAL RESEARCH SERVICE.	FE	1343.00	MULTIPLE CITIES - LONDON AND STOKE ORCHARD. IN LONDON TWICE. PROGRAM PARTIALLY FUNDED BY FE.
FE-13	4	STOKE ORCHARD	UK	12/11/85 12/12/85	BRAITSCH, R.	VISIT COAL RESEARCH ESTABLISHMENT.	FE		MULTIPLE CITIES - LONDON AND STOKE ORCHARD. IN LONDON TWICE. PROGRAM PARTIALLY FUNDED BY FE.
FE-13	4	LONDON	UK	12/12/85 12/13/85	BRAITSCH, R.	DISCUSS US/UK R&D COLLABORATION.	FE		MULTIPLE CITIES - LONDON AND STOKE ORCHARD. IN LONDON TWICE. PROGRAM PARTIALLY FUNDED BY FE.
FE-14	10	GENEVA	SWITZERLAND	10/05/85 10/08/85	GREENBAUM, M.	REPRESENT US AT THE 81ST SESSION OF THE COAL COMMITTEE OF THE UN'S ECONOMIC COMMISSION FOR EUROPE.	FE	1750.00	MULTIPLE COUNTRIES - SWITZERLAND AND FRANCE.
FE-14	10	PARIS	FRANCE	10/08/85 10/12/85	GREENBAUM, R.	ATTEND MEETING OF THE IEA COAL RESEARCH SERVICE TO WORK PLAN FOR THE NEXT FISCAL YEAR. ATTEND IEA MEETING OF THE FOSSIL FUEL WORKING PARTY.	FE		MULTIPLE COUNTRIES - SWITZERLAND AND FRANCE.
FE-14	11	PARIS	FRANCE	10/04/85 10/12/85	GLASER, F.	ATTEND MEETING OF THE IEA COAL RESEARCH SERVICE TO PLAN FOR THE NEXT FISCAL YEAR. ATTEND IEA MEETING OF FOSSIL FUEL WORKING PARTY.	FE	1559.00	
FE-14	12	PARIS	FRANCE	10/13/85 10/16/85	SINGER, M.	PROVIDE SUPPORT TO WALSH FOR DISCUSSIONS WITH IEA COAL RESEARCH SERVICE OFFICIALS ON FINANCIAL ARRANGEMENTS FOR DOE/FE COAL RESEARCH SERVICE ACCOUNT.	FE	3004.00	
FE-14	12	LONDON	UK	10/16/85 10/19/85	SINGER, M.	PROVIDE SUPPORT TO WALSH FOR DISCUSSIONS ON FINANCIAL ISSUES REGARDING DOE/FE COAL RESEARCH SERVICE ACCOUNT WITH IEA COUNTERPARTS.	FE		

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			FOSSIL ENERGY						
FE-14	14	MELBOURNE	AUSTRALIA	10/30/85 11/07/85	GLASER, F.	CHAIR EXECUTIVE COMMITTEE MEETING OF IEA IMPLEMENTING AGREEMENT ON COAL COMBUSTION SCIENCE.	FE	3823.00	REPLACES BARRETT (FE-14).
FE-14	15	LONDON	UK	12/10/85 12/11/85	SINGER, N.	LEAD REVIEW OF ONGOING WORK AT TECHNICAL PROGRAM COMMITTEE MEETING OF THE IEA COAL RESEARCH SERVICE.	FE	1636.00	MULTIPLE CITIES - LONDON AND STOKE ORCHARD. IN LONDON TWICE. PROGRAM PARTIALLY FUNDED BY FE.
FE-14	15	STOKE ORCHARD	UK	12/11/85 12/12/85	SINGER, N.	VISIT COAL RESEARCH ESTABLISHMENT.	FE		MULTIPLE CITIES - LONDON AND STOKE ORCHARD. IN LONDON TWICE. PROGRAM PARTIALLY FUNDED BY FE.
FE-14	15	LONDON	UK	12/12/85 12/13/85	SINGER, N.	DISCUSS US/UK R&D COLLABORATION.	FE		MULTIPLE CITIES - LONDON AND STOKE ORCHARD. IN LONDON TWICE. PROGRAM PARTIALLY FUNDED BY FE.
FE-14	16	LONDON	UK	01/11/86 01/13/86	GREENBAUM, H.	MEET WITH STAFF OF IEA COAL RESEARCH SERVICE REGARDING IMPACT OF DATA BASE AGGREGATION EFFORTS.	FE	1522.00	
FE-14	16	PARIS	FRANCE	01/13/86 01/17/86	GREENBAUM, H.	ATTEND IEA'S AD HOC GROUP OF EXPERTS ON ENERGY TECHNOLOGY INFORMATION MEETING. ATTEND PLANNING MEETING OF THE IEA COUNTRY REVIEW PROCESS.	FE		
FE-20	5	ROME	ITALY	12/01/85 12/03/85	SMINK, D.	MEET WITH MICA OFFICIALS REGARDING COAL WATER MIXTURES PROJECT AND COMPUTER DATA BASE PROJECT.	FE	1934.00	MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
FE-20	5	MILAN	ITALY	12/03/85 12/04/85	SMINK, D.	MEET WITH ENI OFFICIALS REGARDING ADVANCED ENVIRONMENTAL CLEANUP PROJECT.	FE		MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
FE-20	5	ROME	ITALY	12/04/85 12/06/85	SMINK, D.	PRE-BRIEF US EMBASSY ON PROJECT REVIEW STATUS. PARTICIPATE IN PROJECT REVIEW WITH MICA.	FE		MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
FE-20	6	GENEVA	SWITZERLAND	01/08/86 01/11/86	SIEGEL, J.	ATTEND FOURTH SEMINAR ON THE CONTROL OF SULFUR DIOXIDE AND NITROGEN OXIDES FROM STATIONARY SOURCES.		2038.00	
FE-20	8	GENEVA	SWITZERLAND	01/08/86 01/11/86	SMINK, D.	MEET WITH UN ECONOMIC COMMISSION FOR EUROPE TO DISCUSS CONTROL OF SULPHUR AND NITROGEN OXIDES.		2038.00	
FE-23	6	PARIS	FRANCE	10/27/85 11/01/85	PELL, J.	MEET WITH IEA/OECD FOR INTERVIEW AND ORIENTATION FOR THE POSITION OF ASST DIR., OFFICE OF ENERGY RESEARCH DEVELOPMENT AND TECHNOLOGY APPLICATIONS.	IEA/FE	200.00	FUNDED BY IEA.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

FOSSIL ENERGY

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
FE-23	7	ROME	ITALY	12/01/85 12/02/85	FEIBUS, H.	MEET WITH MICA OFFICIALS REGARDING COAL WATER MIXTURES PROJECT AND COMPUTER DATA BASE PROJECT.	FE	1824.00	MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
FE-23	7	MILAN	ITALY	12/03/85 12/04/85	FEIBUS, H.	MEET WITH ENI OFFICIALS REGARDING ADVANCED ENVIRONMENTAL CLEANUP PROJECT.	FE		MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
FE-23	7	ROME	ITALY	12/05/85 12/07/85	FEIBUS, H.	PRE-BRIEF US EMBASSY ON PROJECT REVIEW STATUS. PARTICIPATE IN PROJECT REVIEW WITH MICA. MEET WITH ENEL OFFICIALS ON COMBUSTION STUDY PROJECT.	FE		MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
FE-23	8	TOKYO	JAPAN	11/30/85 12/05/85	FOSTER, C.	CHAIR EXECUTIVE COMMITTEE MTG TO IEA UMBRELLA IMPLEMENTING AGREEMENT ENTITLED "PROGRAMME R&D, DEVELOPMENT AND DEMONSTRATION OF COAL LIQUID MIXTURES.	FE	1934.00	MULTIPLE CITIES - TOKYO, FUKUOKA, AIOI, AND OSAKA.
FE-23	8	FUKUOKA	JAPAN	12/05/85 12/06/85	FOSTER, C.	VISIT COAL LIQUID MIXTURES PLANT.	FE		MULTIPLE CITIES - TOKYO, FUKUOKA, AIOI, AND OSAKA.
FE-23	8	AIOI	JAPAN	12/06/85 12/06/85	FOSTER, C.	VISIT COAL LIQUID MIXTURES PLANT.	FE		MULTIPLE CITIES - TOKYO, FUKUOKA, AIOI, AND OSAKA.
FE-23	8	OSAKA	JAPAN	12/06/85 12/07/85	FOSTER, C.	VISIT COAL LIQUID MIXTURES PLANT.	FE		MULTIPLE CITIES - TOKYO, FUKUOKA, AIOI, AND OSAKA.
FE-30	4	CARACAS	VENEZUELA	11/17/85 11/23/85	HARTSTEIN, A.	VISIT REFINERIES TO DETERMINE SPECIFIC PROBLEMS ASSOCIATED WITH REFINING & PROCESSING OF HEAVY CRUDES. IDENTIFY ANALYSES REQUIRED TO ENHANCE PROCESS.	FE	1081.00	
FE-30	5	PUERTO LA CRUZ	VENEZUELA	02/24/86 02/27/86	FRYE, K.	CHAIR US PARTICIPATION IN ANNUAL US-VENEZUELA JOINT STEERING COMMITTEE MEETING FOR COOPERATION ON ENHANCED OIL RECOVERY R&D.	FE	1257.00	LEAD TEAM OF FOUR DOE EMPLOYEES.
FE-33	9	TOKYO	JAPAN	10/06/85 10/20/85	STOSUR, J.	ATTEND IEA WORKSHOP ON ENHANCED OIL RECOVERY (EOR). CHAIR IEA EXECUTIVE COMMITTEE MEETING FOR COOPERATION IN EOR.	FE	2279.00	
FE-33	10	PUERTO LA CRUZ	VENEZUELA	02/24/86 02/27/86	STOSUR, J.	PROVIDE TECHNICAL EXPERTISE & DETAILED OPERATING KNOWLEDGE AT US-VENEZUELA JOINT STEERING COMMITTEE MEETING FOR COOPERATION ON ENHANCED OIL RECOVERY.	FE	1257.00	MEMBER OF TEAM OF FOUR DOE EMPLOYEES.
FE-33	11	MILAN	ITALY	02/10/86 02/14/86	STOSUR, J.	PARTICIPATE IN US-ITALY STEERING COMMITTEE MEETING ON COOPERATION IN ENHANCED OIL RECOVERY.	FE	2126.00	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			FOSSIL ENERGY						
FE-33	14	MEXICO CITY	MEXICO	03/24/86 03/27/86	[illegible], J.	DISCUSS RESOLUTION OF ANNEX V TO MOU FOR COOPERATION IN ENERGY R&D BETWEEN THE MEXICAN PETROLEUM INSTITUTE AND DOE.	FE	635.00	FE.
FE-34	5	SYDNEY	AUSTRALIA	10/26/85 11/02/85	[illegible], E.	ATTEND THE INTERNATIONAL CONFERENCE ON COAL SCIENCE. PRESENT A PAPER ENTITLED "DIRECT COAL LIQUEFACTION: NEW R&D DIRECTIONS."	FE	2900.00	
FE-34	8	TOKYO	JAPAN	10/20/85 10/27/85	HAMILTON, R.	PARTICIPATE IN SECOND ANNUAL - JAPAN JOINT TECHNICAL EXCHANGE ON COAL LIQUEFACTION.	FE	2000.00	
FE-34	9	COLOGNE	FRG	12/08/85 12/14/85	BATCHELOR, J.	PARTICIPATE AS SENIOR DOE REP TO STEERING AND MANAGEMENT COMMITTEES MEETINGS ON US/FRG BILATERAL PROJECT ON METHANOL-TO-GASOLINE/OLEFINS.	FE	2410.00	MULTIPLE CITIES - COLOGNE AND SAARBRUCKEN.
FE-34	9	SAARBRUCKEN	FRG	12/14/85 12/16/85	BATCHELOR, J.	HOLD TECHNICAL DISCUSSIONS ON COAL LIQUEFACTION PROGRAM ACTIVITIES AND PLANS WITH PROJECT MANAGEMENT STAFF.	FE		MULTIPLE CITIES - COLOGNE AND SAARBRUCKEN.
						TOTAL		47000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

** TRAVEL FOR OFFICE GC- GENERAL COUNSEL

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
GC-1	3	PARIS	FRANCE	10/19/85 10/23/85	FARRELL, J.	LEAD ANTITRUST TEAM FOR IEA AST-5 MEETINGS.	GC	1466.00	
GC-40	2	PARIS	FRANCE	10/16/85 10/20/85	CARMEN, N.	SERVE AS ANTITRUST OBSERVER FOR IEA AST-5 MEETINGS.	GC	1366.00	
GC-40	3	PARIS	FRANCE	10/19/85 11/03/85	VINES, C.	PROVIDE SECRETARIAL SUPPORT TO ANTITRUST OBSERVERS TO IEA AST-5 MEETINGS.	GC	2142.00	
GC-41	1	PARIS	FRANCE	10/05/85 10/26/85	BRADLEY, S.	SERVE AS ANTITRUST OBSERVER FOR IEA AST-5 MEETINGS.	GC	2814.00	MEMBER OF ANTITRUST TEAM CONSISTING OF SEVEN DOE/GC EMPLOYEES. APPROVED CEILING OF FIVE.
GC-41	2	PARIS	FRANCE	10/21/85 11/04/85	HOWE, L.	SERVE AS ANTITRUST OBSERVER FOR IEA AST-5 MEETINGS.	GC	2490.00	
GC-41	3	PARIS	FRANCE	10/31/85 11/10/85	GARRISON, E.	SERVE AS ANTITRUST OBSERVER FOR IEA AST-5 MEETINGS.	GC	2490.00	
GC-41	4	PARIS	FRANCE	10/31/85 11/13/85	MOORE, P.	PROVIDE SECRETARIAL SUPPORT TO ANTITRUST OBSERVERS TO IEA AST-5 MEETINGS.	GC	2490.00	
GC-41	5	PARIS	FRANCE	02/07/86 02/13/86	BAMBERGER, C.	ATTEND MEETINGS OF THE INDUSTRY ADVISORY BOARD AND THE STANDING GROUP ON EMERGENCY QUESTIONS.	GC	2250.00	
GC-42	1	MADRID	SPAIN	10/29/85 11/01/85	IZELL, K.	PROVIDE PATENT ADVICE ON FINAL DETAILS OF AGREEMENT WITH US-SPAIN JOINT COMMITTEE FOR SCIENTIFIC AND TECHNOLOGICAL COOPERATION.	STATE/GC	0.00	FUNDED BY DEPT. OF STATE.
						TOTAL		18000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE ID			IDAHO OPERATIONS OFFICE						
ID	10	SACLAY	FRANCE	10/06/85 10/12/85	GESELL, T.	PRESENT PAPER ON REVIEW OF BETA DOSIMETRY RESEARCH AND APPLICATION IN US AT TWO CONFERENCES SPONSORED BY COMMISSION OF EUROPEAN COMMUNITIES.	ID	1750.00	
ID	15	PARIS	FRANCE	11/21/85 11/23/85	SATO, H.	ATTEND OECD LOFT MANAGEMENT BOARD MEETING.	HQ	2000.00	DISAPPROVED BY HQ. DELEGATION CONSISTS OF TWO DOE EMPLOYEES AND ONE CONTRACTOR.
ID	16	SEOUL	KOREA	01/07/86 01/10/86	BALL, L	PERFORM TECHNICAL CONSULTATION AND PROJECT MANAGEMENT FOR GEOPHYSICAL DATA COLLECTION.	US ARMY	0.00	FUNDED BY US ARMY.
ID	17	BERLIN	FRG	01/26/86 01/27/86	HAESTAG, S.	DISCUSS GLASS DEVELOPMENT WITHIN FRG PROGRAM FOR VITRIFYING HIGH-LEVEL WASTES.	HQ	2250.00	MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
ID	17	KARLSRUHE	FRG	01/27/86 01/29/86	HAESTAG, S.	DISCUSS PROCESSING AND EQUIPMENT ISSUES RELATED TO HIGH-LEVEL WASTE TECHNOLOGY PROGRAM.	HQ		MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
ID	17	MOL	BELGIUM	01/29/86 02/01/86	HAESTAG, S.	DISCUSS PAMELA VITRIFICATION TECHNOLOGY PROGRAM.	HQ		MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
ID	17	HARWELL	UK	02/01/86 02/04/86	HAESTAG, S.	REVIEW AND EVALUATE VITRIFICATION TECHNOLOGY, SUCTION DRAINING TECHNIQUE.	HQ		MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
						TOTAL		6000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

INTERNATIONAL AFFAIRS AND ENERGY EMERGENCIES

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE IE-									
IE-1	13	PARIS	FRANCE	10/17/85 10/29/85	CARUSO, G.	ATTEND SOM AND GOVERNING BOARD MEETINGS. MEET WITH IEA OFFICIALS.	IE	3035.00	
IE-1	14	PARIS	FRANCE	02/14/86 02/19/86	BRADLEY, G.	ATTEND SPECIAL MEETING OF THE IEA GOVERNING BOARD REPRESENTATIVES. MEET WITH IEA AND FRENCH OFFICIALS.	IE	3282.00	
IE-10	8	RIYADH	SAUDI ARABIA	12/12/85 12/17/85	RANDOLPH, S.	PARTICIPATE IN THE GULF COOPERATION COUNCIL ECONOMIC DISCUSSIONS.	IE	3802.00	
IE-10	9	PARIS	FRANCE	02/20/86 02/22/86	RANDOLPH, S.	PARTICIPATE IN IEA/SLT JAPANESE COUNTRY REVIEW.	IE	1840.00	
IE-12	12	PARIS	FRANCE	10/06/85 10/10/85	JAFFE, H.	REPRESENT US AT THE IEA/CRD MEETING. DISCUSS GENERAL DOE TOPICS WITH MISSION, NEA, AND SECRETARIAT.	STATE/IE	125.00	TRANSPORTATION AND PARTIAL PER DIEM FUNDED BY STATE.
IE-12	13	PARIS	FRANCE	10/26/85 11/01/85	JAFFE, H.	ATTEND NEA STEERING COMMITTEE MEETING.	IE	2232.00	
IE-12	14	MADRID	SPAIN	10/29/85 11/01/85	SOLIMAN, M.	RESOLVE ISSUES CONCERNING DOE-JOINT COMMISSION AGREEMENTS AND THE PROPOSED DOE-JEN BILATERAL AGREEMENT.	STATE	0.00	FUNDED BY STATE DEPT.
IE-12	15	TOKYO	JAPAN	11/05/85 11/10/85	RANDOLPH, S.	PARTICIPATE IN DISCUSSIONS ON US URANIUM ENRICHMENT PROGRAM. MEET WITH ENERGY OFFICIALS.	IE	2751.00	
IE-12	16	LONDON	UK	11/17/85 11/18/85	JAFFE, H.	ACCOMPANY AND INTRODUCE NEW CHAIRMAN OF THE IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT TO COUNTRY REPRESENTATIVES.	IE	2645.00	MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN.
IE-12	16	PARIS	FRANCE	11/18/85 11/19/85	JAFFE, H.	ACCOMPANY AND INTRODUCE NEW CHAIRMAN OF THE IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT TO IEA SECRETARIAT EMPLOYEES.	IE		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN.
IE-12	16	COLOGNE	FRG	11/19/85 11/20/85	JAFFE, H.	ACCOMPANY AND INTRODUCE NEW CHAIRMAN OF THE IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT TO IEA SECRETARIAT EMPLOYEES.	IE		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN.
IE-12	16	STOCKHOLM	SWEDEN	11/20/85 11/21/85	JAFFE, H.	ACCOMPANY AND INTRODUCE NEW CHAIRMAN OF THE IEA'S COMMITTEE ON RESEARCH & DEVELOPMENT TO IEA SECRETARIAT EMPLOYEES.	IE		MULTIPLE COUNTRIES - UK, FRANCE, FRG, AND SWEDEN.
IE-12	17	PARIS	FRANCE	12/01/85 12/05/85	JAFFE, H.	ATTEND IEA/CRD MEETING.	STATE	0.00	FUNDED BY STATE DEPT.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			INTERNATIONAL AFFAIRS AND ENERGY EMERGENCIES						
IE-12	19	PARIS	FRANCE	01/12/86 01/14/86	JAFFE, N.	HOLD DISCUSSIONS ON THEMATIC REVIEWS, WORKSHOP PROCESS, AND NEA PLANNING.	IE	2591.00	
IE-12	19	GARCHING	FRG	01/14/86 01/18/86	JAFFE, N.	PARTICIPATE AS MEMBER OF OFFICIAL DOE DELEGATION FOR POST-VERSAILLES SUMMIT CONFERENCE ON FUSION.	IE		
IE-12	20	TOKYO	JAPAN	02/25/86 03/02/86	JAFFE, N.	PARTICIPATE IN DISCUSSIONS AT STAT/PNC AND JAERI ON IMPACT OF FY 87 BUDGET ON NUCLEAR PROGRAMS WITH JAPAN AND SUMMIT WORKING GROUP ON MAGNETIC FUSION.	IE	3416.00	TRAVELER WILL PARTICIPATE IN DISCUSSIONS ON NUCLEAR PROGRAM PRIOR TO SUMMIT WORKING GROUP MEETING ON MAGNETIC FUSION.
IE-12	21	MADRID	SPAIN	03/04/86 03/06/86	DUGGER, J.	PARTICIPATE IN BILATERAL DISCUSSIONS ON POSITIONS ON OCEAN DISPOSAL OF NUCLEAR WASTES IN PREPARATION FOR FALL LONDON DUMPING CONVENTION (LDC) MEETING.	IE	3735.00	MULTIPLE COUNTRIES - SPAIN, PORTUGAL, SWEDEN, FRANCE, AND FRG.
IE-12	21	LISBON	PORTUGAL	03/06/86 03/09/86	DUGGER, J.	PARTICIPATE IN BILATERAL DISCUSSIONS ON POSITIONS ON OCEAN DISPOSAL OF NUCLEAR WASTES IN PREPARATION FOR FALL LONDON DUMPING CONVENTION (LDC) MEETING.	IE		MULTIPLE COUNTRIES - SPAIN, PORTUGAL, SWEDEN, FRANCE, AND FRG.
IE-12	21	STOCKHOLM	SWEDEN	03/09/86 03/11/86	DUGGER, J.	PARTICIPATE IN BILATERAL DISCUSSIONS ON POSITIONS ON OCEAN DISPOSAL OF NUCLEAR WASTES IN PREPARATION FOR FALL LONDON DUMPING CONVENTION (LDC) MEETING.	IE		MULTIPLE COUNTRIES - SPAIN, PORTUGAL, SWEDEN, FRANCE, AND FRG.
IE-12	21	PARIS	FRANCE	03/11/86 03/13/86	DUGGER, J.	PARTICIPATE IN BILATERAL DISCUSSIONS ON POSITIONS ON OCEAN DISPOSAL OF NUCLEAR WASTES IN PREPARATION FOR FALL LONDON DUMPING CONVENTION (LDC) MEETING.	IE		MULTIPLE COUNTRIES - SPAIN, PORTUGAL, SWEDEN, FRANCE, AND FRG.
IE-12	21	BONN	FRG	03/13/86 03/14/86	DUGGER, J.	PARTICIPATE IN BILATERAL DISCUSSIONS ON POSITIONS ON OCEAN DISPOSAL OF NUCLEAR WASTES IN PREPARATION FOR FALL LONDON DUMPING CONVENTION (LDC) MEETING.	IE		MULTIPLE COUNTRIES - SPAIN, PORTUGAL, SWEDEN, FRANCE, AND FRG.
IE-122	6	BONN	FRG	12/01/85 12/03/85	CEJA, S.	PARTICIPATE IN INTERAGENCY TEAM DISCUSSING IAEA SAFEGUARDS.	IE	3318.00	MULTIPLE COUNTRIES - FRG, FRANCE, LUXEMBOURG, AND UK.
IE-122	6	PARIS	FRANCE	12/03/85 12/05/85	CEJA, S.	PARTICIPATE IN INTERAGENCY TEAM DISCUSSING IAEA SAFEGUARDS.	IE		MULTIPLE COUNTRIES - FRG, FRANCE, LUXEMBOURG, AND UK.
IE-122	6	LUXEMBOURG	LUXEMBOURG	12/05/85 12/06/85	CEJA, S.	PARTICIPATE IN INTERAGENCY TEAM DISCUSSING IAEA SAFEGUARDS.	IE		MULTIPLE COUNTRIES - FRG, FRANCE, LUXEMBOURG, AND UK.
IE-122	6	LONDON	UK	12/06/85 12/10/85	CEJA, S.	PARTICIPATE IN INTERAGENCY TEAM DISCUSSING IAEA SAFEGUARDS.	IE		MULTIPLE COUNTRIES - FRG, FRANCE, LUXEMBOURG, AND UK.
IE-13	13	VIENNA	AUSTRIA	10/13/85 11/02/85	JACKSON, R.	REPRESENT DOE AT IAEA COMMITTEE ON ASSURANCE OF SUPPLY (CAS) MTG AND PREPARATORY COMMITTEE MTG FOR UN CONFERENCE ON PEACEFUL USES OF NUCLEAR ENERGY.	STATE/IE	1073.00	PARTIALLY FUNDED BY STATE DEPT.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			INTERNATIONAL AFFAIRS AND ENERGY EMERGENCIES						
IE-13	15	BEIJING	PRC	01/21/86 01/26/86	BRUSH, P.	DISCUSS IMPLEMENTATION OF US-PRC BILATERAL AGREEMENT FOR NUCLEAR COOPERATION.	IE	3411.00	
IE-13	15	TOKYO	JAPAN	01/26/86 01/31/86	BRUSH, P.	DISCUSS US-JAPAN NUCLEAR NEGOTIATIONS.	IE		
IE-13	16	VIENNA	AUSTRIA	02/15/86 02/20/86	CEJA, S.	ATTEND IAEA BOARD OF GOVERNORS MEETING.	IE	3389.00	MULTIPLE COUNTRIES - AUSTRIA AND SWITZLERLAND.
IE-13	16	BERN	SWITZLERLAND	02/20/86 02/22/86	CEJA, S.	PARTICIPATE, AS PART OF AN INTERAGENCY TEAM, IN NONPROLIFERATION DISCUSSION WITH SWISS GOVERNMENT REPRESENTATIVES.	IE		MULTIPLE COUNTRIES - AUSTRIA AND SWITZLERLAND.
IE-141	13	GENEVA	SWITZERLAND	10/06/85 10/10/85	FORMAN, E.	PARTICIPATE IN 81ST SESSION OF ECE COAL COMMITTEE.	STATE	0.00	FUNDED BY STATE.
IE-141	14	LONDON	UK	10/14/85 10/14/85	CUTLER, T.	MEET WITH LLOYDS' OFFICIALS ON DOE CONTRACT.	IE	2095.00	
IE-141	14	BRUSSELS	BELGIUM	10/14/85 10/17/85	CUTLER, T.	CHAIR PETROLEUM PLANNING COMMITTEE (PPC) MEETINGS.	IE		
IE-141	14	MADRID	SPAIN	10/17/85 10/21/85	CUTLER, T.	BRIEF ENERGY AND DEFENSE OFFICIALS ON NATO/PETROLEUM PLANNING COMMITTEE (PPC).	IE		
IE-141	14	BRUSSELS	BELGIUM	10/21/85 10/25/85	CUTLER, T.	ATTEND NATO CHAIRMAN'S MEETING. CHAIR PETROLEUM PLANNING COMMITTE (PPC) MEETINGS.	IE		
IE-141	15	NICE	FRANCE	11/11/85 11/14/85	PRICE, R.	PARTICIPATE IN GASTECH CONFERENCE.	IE	2190.00	
IE-141	15	PARIS	FRANCE	11/14/85 11/16/85	PRICE, R.	MEET WITH ENERGY OFFICIALS.	IE	2190.00	
IE-141	16	BRUSSELS	BELGIUM	12/03/85 12/07/85	CUTLER, T.	ATTEND SCEPC AND NATO CHAIRMEN'S MEETINGS.	IE	1593.00	
IE-141	17	PARIS	FRANCE	12/04/85 12/06/85	PRICE, R.	ATTEND IEA/SLT MEETING.	IE	2106.00	MULTIPLE COUNTRIES - FRANCE AND UK.
IE-141	17	OXFORD	UK	12/09/85 12/09/85	PRICE, R.	ATTEND MEETING AT OXFORD ENERGY INSTITUTE.	IE		MULTIPLE COUNTRIES - FRANCE AND UK.
IE-141	18	PARIS	FRANCE	01/27/86 02/01/86	GERMAN, T.	MEET WITH IEA STAFF. ATTEND IEA/SLT SUBGROUP ON ENERGY CONSERVATION MEETING.	IE	2135.00	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			INTERNATIONAL AFFAIRS AND ENERGY EMERGENCIES						
IE-141	19	PARIS	FRANCE	01/08/86 01/10/86	KEANE, C.	ATTEND IEA GAS EXPERTS MEETING.	IE	1895.00	
IE-141	20	PARIS	FRANCE	01/08/86 01/10/86	PRICE, B.	ATTEND IEA GAS EXPERTS MEETING.	IE	1895.00	
IE-141	21	GENEVA	SWITZERLAND	01/19/86 01/25/86	KEANE, C.	ATTEND ECE NATURAL GAS MEETING.	IE	1699.00	
IE-141	22	GENOA	ITALY	01/19/86 01/22/86	FORMAN, E.	MEET WITH ITALIAN OFFICIALS AND CONSULTANTS ON US-ITALIAN COAL LOGISTICS STUDY.	IE	2023.00	
IE-141	22	ROME	ITALY	01/22/86 01/25/86	FORMAN, E.	MEET WITH ITALIAN OFFICIALS AND CONSULTANTS ON US-ITALIAN COAL LOGISTICS STUDY.	IE		
IE-141	22	LONDON	UK	01/25/86 01/26/86	FORMAN, E.	MEET WITH CONSULTANTS ON COAL LOGISTICS STUDY.	IE		
IE-141	23	PARIS	FRANCE	02/18/86 02/22/86	GERMAN, T.	MEET WITH IEA STAFF. ATTEND IEA/SLT SUBGROUP ON ENERGY CONSERVATION MEETING.	IE	2100.00	
IE-142	2	BONN	FRG	11/20/85 11/20/85	PUMPHREY, D.	ATTEND MEETINGS WITH FRG OFFICIALS ON AGT-5.	IE	2150.00	MULTIPLE COUNTRIES - FRG AND FRANCE.
IE-142	2	PARIS	FRANCE	11/20/85 11/22/85	PUMPHREY, D.	ATTEND MEETINGS WITH FRENCH AND IEA OFFICIALS ON AGT-5.	IE		MULTIPLE COUNTRIES - FRG AND FRANCE.
IE-23	8	LONDON	UK	11/07/85 11/08/85	DIAZ, R.	ATTEND PETROLEUM PLANNING COMMITTEE/PLANNING BOARD OCEAN SHIPPING MEETING.	IE	2110.00	
IE-231	5	BRUSSELS	BELGIUM	11/26/85 11/28/85	DIAZ, R.	ATTEND NATO PETROLEUM PLANNING COMMITTEE WORKING GROUP MEETING AS US REPRESENTATIVE.	IE	1760.00	
IE-24	1	LONDON	UK	02/18/86 02/20/86	CARUSO, G.	VISIT UK DOE TO DISCUSS ENERGY EMERGENCY PREPAREDNESS AND FOLLOW-UP ISSUES.	IE	2055.00	MULTIPLE COUNTRIES - UK AND FRANCE.
IE-24	1	PARIS	FRANCE	02/20/86 02/23/86	CARUSO, G.	MEET WITH IEA OFFICIALS REGARDING FOLLOW-UP TO COORDINATED STOCK DRAW-DOWN ISSUES.	IE		MULTIPLE COUNTRIES - UK AND FRANCE.
						TOTAL		69000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE MA-			MANAGEMENT AND ADMINISTRATION						
MA-1	5	TOKYO	JAPAN	02/27/86 03/02/86	HESSE, M.	PARTICIPATE IN MEETING OF SUMMIT WORKING GROUP IN CONTROLLED THERMONUCLEAR FUSION AS FOLLOW-UP TO MEETING IN MUNICH, FRG.	MA	2200.00	
MA-2	3	LONDON	UK	11/14/85 11/17/85	PEEBLES, N.	DISCUSS IMPENDING INFORMATION AGREEMENT WITH THE IEA.	MA	3654.00	
MA-2	3	VIENNA	AUSTRIA	11/17/85 11/23/85	PEEBLES, N.	ATTEND THE 5TH ADVISORY COMMITTEE MEETING FOR THE INTERNATIONAL NUCLEAR INFORMATION SYSTEM.	MA		
						TOTAL		6000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE METC			MORGANTOWN ENERGY TECHNOLOGY CENTER						
METC	7	SYDNEY	AUSTRALIA	10/28/85 11/01/85	KHAN, R.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE AND PRESENT A PAPER ON THERMOPLASTIC PROPERTIES OF COAL PYROLYZED AT ELEVATED PRESSURE.	FE	1925.00	
METC	10	WINTERTHUR	SWITZERLAND	10/16/85 10/19/85	CARPENTER, L.	DISCUSS AND PERFORM SITE ASSESSMENT OF LARGE LOW-SPEED COAL-SLURRY TESTS.	FE	3000.00	
METC	10	DUBLIN	IRELAND	10/19/85 10/22/85	CARPENTER, L.	DISCUSS ADVANCE DIESEL ENGINES USING CERAMICS & OPPOSED PISTONS	FE		
METC	10	SUSSEX	UK	10/23/85 10/24/85	CARPENTER, L.	DISCUSS PROJECT ON DIESEL ENGINE SUPPORT.	FE		
METC	10	MANCHESTER	UK	10/24/85 10/26/85	CARPENTER, L.	REVIEW METC RIG PROJECT.	FE		
METC	11	ROME	ITALY	12/01/85 12/02/85	STRICKLAND, L.	MEET WITH RICA OFFICIALS REGARDING COAL WATER MIXTURES PROJECT AND COMPUTER DATA BASE PROJECT.	FE	1934.00	MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
METC	11	MILAN	ITALY	12/03/85 12/04/85	STRICKLAND, L.	MEET WITH ENI OFFICIALS REGARDING ADVANCED ENVIRONMENTAL CLEANUP PROJECT.	FE		MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
METC	11	ROME	ITALY	12/05/85 12/07/85	STRICKLAND, L.	PRE-BRIEF US EMBASSY ON PROJECT REVIEW STATUS. PARTICIPATE IN PROJECT REVIEW WITH RICA. MEET WITH ENEL ON COMBUSTION STUDY PROJECT.	FE		MULTIPLE CITIES - ROME AND MILAN. MEMBER OF DOE DELEGATION.
						TOTAL		7000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

NEVADA OPERATIONS OFFICE

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE NOO									
NOO	1	CANBERRA	AUSTRALIA	03/31/86 04/30/86	CHURCH, D.	PARTICIPATE IN A TECHNICAL ASSESSMENT GROUP TO CONSIDER OPTIONS FOR DECONTAMINATION OF FORMER BRITISH NUCLEAR SITES IN AUSTRALIA.	DP	0.00	DP. MULTIPLE COUNTRIES - AUSTRALIA AND UK. DATES TO BE DETERMINED.
						TOTAL		-0-	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE NE-			NUCLEAR ENERGY						
NE-1	5	MADRID	SPAIN	10/13/85 10/16/85	VAUGHAN, J.	PRESENT A PAPER ON BEHALF OF US BEFORE THE 3RD INTERNATIONAL CONFERENCE ON NUCLEAR TECHNOLOGY TRANSFER.	NE	3219.00	
NE-1	6	PARIS	FRANCE	10/27/85 11/03/85	VAUGHAN, J.	ATTEND NEA STEERING COMMITTEE MEETING. MEET WITH OFFICIALS TO DISCUSS ADVANCED REACTOR COOPERATION.	STATE/NE	946.00	FUNDED BY STATE.
NE-15	6	PARIS	FRANCE	10/07/85 10/12/85	MCPHERSON, D.	REPRESENT DOE AT CSNI'S PRINCIPAL WORKING GROUP 2 ON TRANSIENTS AND PRIMARY CIRCUIT BREAKS.	NE	2361.00	
NE-15	7	PETTEN	NETHERLANDS	10/13/85 10/16/85	BAILEY, D.	ATTEND INTERNATIONAL RERTR MEETING.	NE	2532.00	
NE-15	7	FRANKFURT	FRG	10/17/85 10/18/85	BAILEY, D.	VISIT NUKEM TO REVIEW JOINT RERTR/NUKEM FUEL FABRICATION ACTIVITIES.	NE		
NE-15	8	VIENNA	AUSTRIA	11/04/85 11/07/85	ROSEN, S.	REPRESENT US AT SIXTH SESSION OF THE PREPARATORY COMMITTEE FOR PROMOTION OF INTERNATIONAL COOPERATION IN THE PEACEFUL USES OF NUCLEAR ENERGY.	NE	1227.00	
NE-15	9	DUSSELDORF	FRG	12/16/85 12/18/85	ROSEN, S.	HOLD DISCUSSIONS TO IDENTIFY AREAS OF POSSIBLE GOVERNMENTAL COLLABORATION WITH EUROPE UNDER EXISTING BILATERALS.	NE	2288.00	
NE-15	11	PARIS	FRANCE	03/04/86 03/08/86	WEBER, C.	PARTICIPATE AS US DELEGATE TO NEA FUEL CYCLE COMMITTEE MEETING.	NE	1000.00	
NE-15	14	SEOUL	KOREA	02/09/86 02/15/86	WEBER, C.	VISIT KAERI TO DEVELOP A PLAN FOR US-KOREAN COOPERATION IN THE DESIGN AND CONSTRUCTION OF A MULTIPURPOSE RESEARCH REACTOR.	NE	2609.00	
NE-15	15	KALPAKKAM	INDIA	03/09/86 03/15/86	HORTON, K.	REPRESENT US AT THE IAEA INTERNATIONAL WORKING GROUP FOR FAST REACTORS MEETING. PRESENT PAPER ON LMFBR.	NE	3352.00	MULTIPLE COUNTRIES - INDIA AND JAPAN. AMENDMENT TO ADD JAPAN. ORIGINAL APPROVED (2/6/86).
NE-15	15	TOKYO	JAPAN	03/15/86 03/18/86	HORTON, K.	DISCUSS US POSITION ON CONTINUATION OF EXISTING COOPERATIVE EXCHANGES.	NE		MULTIPLE COUNTRIES - INDIA AND JAPAN. AMENDMENT TO ADD JAPAN. ORIGINAL APPROVED (2/6/86).
NE-15	16	ZURICH	SWITZERLAND	02/02/86 02/05/86	ROSEN, S.	SELL ENRICHMENT SERVICES (SWU'S) TO SWISS UTILITIES. DISCUSS REDUCING THE PRICE OF SWU'S IN EXCHANGE FOR SWISS PU BEING MADE AVAILABLE TO DOE.	NE	2353.00	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

NUCLEAR ENERGY

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
NE-15	10	TOKYO	JAPAN	02/25/86 02/27/86	ROSEN, S.	DISCUSS DOE BUDGET AND ITS IMPACTS ON COOPERATIVE ACTIVITIES.	NE	2486.00	
NE-23	1	PARIS	FRANCE	11/04/85 11/07/85	DELANEY, E.	PRESENT INVITED PAPER AT NEA HIGH LEVEL WORKSHOP ON NUCLEAR ENERGY PROSPECTS TO YEAR 2000 AND BEYOND. ATTEND SESSIONS OF WORKSHOP.	NE	2160.00	
NE-23	2	TOKYO	JAPAN	11/24/85 11/28/85	DELANEY, E.	PRESENT INVITED PAPER AND PARTICIPATE IN WORKSHOP ON REACTOR DECOMMISSIONING.	NE	2954.00	MULTIPLE CITIES - TOKYO AND TOKAI.
NE-23	2	TOKAI	JAPAN	11/29/85 11/29/85	DELANEY, E.	VISIT TOKAI RESEARCH ESTABLISHMENT AND HITACHI CORP. TO DISCUSS DECOMMISSIONING ACTIVITIES.	NE		MULTIPLE CITIES - TOKYO AND TOKAI.
NE-23	2	TOKYO	JAPAN	11/29/85 11/30/85	DELANEY, E.	DISCUSS BILATERAL AGREEMENT ON DECOMMISSIONING ACTIVITIES.	NE		MULTIPLE CITIES - TOKYO AND TOKAI.
NE-24	3	BERLIN	FRG	01/25/86 01/27/86	MCINTOSH, T.	DISCUSS GLASS DEVELOPMENT WITHIN FRG PROGRAM FOR VITRIFYING HIGH-LEVEL WASTES.	NE	2300.00	MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
NE-24	3	KARLSRUHE	FRG	01/27/86 01/29/86	MCINTOSH, T.	DISCUSS PROCESSING AND EQUIPMENT ISSUES RELATED TO HIGH-LEVEL WASTE TECHNOLOGY PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
NE-24	3	MOL	BELGIUM	01/29/86 02/01/86	MCINTOSH, T.	DISCUSS PAMELA VITRIFICATION TECHNOLOGY PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
NE-24	3	HARWELL	UK	02/01/86 02/04/86	MCINTOSH, T.	REVIEW AND EVALUATE VITRIFICATION TECHNOLOGY, SUCTION DRAINING TECHNIQUE.	NE		MULTIPLE COUNTRIES AND CITIES - FRG, BELGIUM, AND UK.
NE-30	14	TOKYO	JAPAN	11/05/85 11/07/85	LONGENECKER, J.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.	NE	2497.00	MULTIPLE COUNTRIES - JAPAN AND KOREA.
NE-30	14	SEOUL	KOREA	11/07/85 11/08/85	LONGENECKER, J.	MEET WITH KEPCO OFFICIALS REGARDING FUTURE SALES OPPORTUNITIES UNDER US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES - JAPAN AND KOREA.
NE-30	15	TOKYO	JAPAN	11/05/85 11/07/85	MAGNUS, D.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.		3267.00	MULTIPLE COUNTRIES - JAPAN, KOREA, AND TAIWAN.
NE-30	15	SEOUL	KOREA	11/07/85 11/09/85	MAGNUS, D.	HOLD DISCUSSIONS WITH KEPCO REGARDING FUTURE SALES OPPORTUNITIES UNDER THE US ENRICHMENT PROGRAM.			MULTIPLE COUNTRIES - JAPAN, KOREA, AND TAIWAN.
NE-30	15	TAIPEI	TAIWAN	11/09/85 11/13/85	MAGNUS, D.	HOLD DISCUSSIONS WITH TAIWAN POWER COMPANY REGARDING FUTURE SALES OPPORTUNITIES UNDER THE US ENRICHMENT PROGRAM.			MULTIPLE COUNTRIES - JAPAN, KOREA, AND TAIWAN.
NE-30	16	TOKYO	JAPAN	12/02/85 12/08/85	MAGNUS, D.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM. ATTEND OFFICIAL OPENING OF MARTIN MARIETTA'S FAR EAST OFFICE.	NE	4134.00	MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. APPROVED BY TRAVEL BOARD.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			NUCLEAR ENERGY						
NE-30	16	SEOUL	KOREA	12/08/85 12/10/85	MAGNUS, D.	MEET WITH UTILITIES CUSTOMERS TO DISCUSS MARKETING AND SALES UNDER US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. APPROVED BY TRAVEL BOARD.
NE-30	16	SAPPORO	JAPAN	12/10/85 12/11/85	MAGNUS, D.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. APPROVED BY TRAVEL BOARD.
NE-30	16	TOYAMA	JAPAN	12/11/85 12/13/85	MAGNUS, D.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. APPROVED BY TRAVEL BOARD.
NE-30	23	MADRID	SPAIN	01/28/86 01/30/86	BOOHER, D.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE	3400.00	MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
NE-30	23	PARIS	FRANCE	01/30/86 02/01/86	BOOHER, D.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
NE-30	23	BRUSSELS	BELGIUM	02/01/86 02/03/86	BOOHER, D.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
NE-30	23	BERN	SWITZERLAND	02/03/86 02/04/86	BOOHER, D.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
NE-30	23	BELGRADE	YUGOSLAVIA	02/03/86 02/06/86	BOOHER, D.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
NE-30	23	ZAGREB	YUGOSLAVIA	02/06/86 02/08/86	BOOHER, D.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
NE-32	3	TOKYO	JAPAN	11/05/85 11/07/85	SEWELL, P.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.	NE	3267.00	MULTIPLE COUNTRIES - JAPAN, KOREA, AND TAIWAN.
NE-32	3	SEOUL	KOREA	11/07/85 11/09/85	SEWELL, P.	MEET WITH KEPCO OFFICIALS REGARDING FUTURE SALES OPPORTUNITIES UNDER THE US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES - JAPAN, KOREA, AND TAIWAN.
NE-32	3	TAIPEI	TAIWAN	11/09/85 11/13/85	SEWELL, P.	MEET WITH OFFICIALS OF TAIWAN POWER COMPANY REGARDING FUTURE SALES OPPORTUNITIES UNDER ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES - JAPAN, KOREA, AND TAIWAN.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			NUCLEAR ENERGY						
NE-32	4	TOKYO	JAPAN	11/05/85 11/09/85	SCHMITT, E.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.	NE	2680.00	
NE-32	5	TOYKO	JAPAN	12/02/85 12/05/85	SCHMITT, E.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM. ATTEND OFFICIAL OPENING OF MARTIN MARIETTA'S FAR EAST OFFICE.	NE	2941.00	MULTIPLE CITIES - TOKYO AND OSAKA. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
NE-32	5	OSAKA	JAPAN	12/05/85 12/07/85	SCHMITT, E.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN THE US ENRICHMENT PROGRAM.	NE		MULTIPLE CITIES - TOKYO AND OSAKA. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
NE-32	6	TOKYO	JAPAN	12/02/85 12/05/85	SEWELL, P.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN US ENRICHMENT PROGRAM. ATTEND OFFICIAL OPENING OF MARTIN MARIETTA'S FAR EAST OFFICE.	NE	3907.00	MULTIPLE COUNTRIES AND CITIES - JAPAN, KOREA, AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
NE-32	6	OSAKA	JAPAN	12/05/85 12/07/85	SEWELL, P.	DISCUSS POTENTIAL FINANCIAL PARTICIPATION BY JAPANESE IN US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN, KOREA, AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
NE-32	6	SEOUL	KOREA	12/07/85 12/10/85	SEWELL, P.	MEET WITH UTILITIES CUSTOMERS TO DISCUSS MARKETING AND SALES UNDER US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN, KOREA, AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
NE-32	6	TAIPEI	TAIWAN	12/10/85 12/12/85	SEWELL, P.	MEET UTILITIES CUSTOMERS TO DISCUSS MARKETING AND SALES UNDER US ENRICHMENT PROGRAM.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN, KOREA, AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
NE-32	7	TAIPEI	TAIWAN	02/01/86 02/04/86	SEWELL, P.	DISCUSS URANIUM ENRICHMENT ISSUES INVOLVING INCENTIVE PRICE ACCEPTANCE.	NE	3127.00	MULTIPLE COUNTRIES - TAIWAN, KOREA, AND JAPAN. MEMBER OF TEAM OF FIVE MEMBERS.
NE-32	7	SEOUL	KOREA	02/04/86 02/09/86	SEWELL, P.	DISCUSS URANIUM ENRICHMENT ISSUES INVOLVING INCENTIVE PRICE ACCEPTANCE.	NE		MULTIPLE COUNTRIES - TAIWAN, KOREA, AND JAPAN. MEMBER OF TEAM OF FIVE MEMBERS.
NE-32	7	TOKYO	JAPAN	02/09/86 02/12/86	SEWELL, P.	DISCUSS URANIUM ENRICHMENT ISSUES INVOLVING INCENTIVE PRICE ACCEPTANCE.	NE		MULTIPLE COUNTRIES - TAIWAN, KOREA, AND JAPAN. MEMBER OF TEAM OF FIVE MEMBERS.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			NUCLEAR ENERGY						
NE-32	8	TAIPEI	TAIWAN	03/11/86 03/13/86	SEWELL, P.	DISCUSS URANIUM ENRICHMENT CONTRACT MATTERS WITH TAIWAN UTILITIES' OFFICIALS.	NE	2456.00	MULTIPLE COUNTRIES - TAIWAN AND KOREA.
NE-32	8	SEOUL	KOREA	03/13/86 03/15/86	SEWELL, P.	DISCUSS URANIUM ENRICHMENT CONTRACT MATTERS WITH KOREAN UTILITIES' OFFICIALS.	NE		MULTIPLE COUNTRIES - TAIWAN AND KOREA.
NE-40	4	PARIS	FRANCE	11/04/85 11/08/85	BUNCH, D.	PARTICIPATE AS US MEMBER OF DELEGATION TO NEA HIGH LEVEL WORKSHOP ON NUCLEAR ENERGY PROSPECTS TO YEAR 2000 AND BEYOND.	NE	3018.00	
NE-40	5	MUNICH	FRG	01/14/86 01/15/86	WERNER, T.	DISCUSS LWF-RE CONSTRUCTION AND FINANCING ARRANGEMENTS AT VARIOUS PLANTS.	NE	2500.00	MULTIPLE COUNTRIES - FRG, FRANCE, AND SWITZERLAND. EXACT IN-COUNTRY DATES TO BE DETERMINED.
NE-40	5	PARIS	FRANCE	01/15/86 01/16/86	WERNER, T.	DISCUSS LWF-RE CONSTRUCTION AND FINANCING ARRANGEMENTS AT VARIOUS PLANTS.	NE		MULTIPLE COUNTRIES - FRG, FRANCE, AND SWITZERLAND. EXACT IN-COUNTRY DATES TO BE DETERMINED.
NE-40	5	ZURICH	SWITZERLAND	01/17/86 01/20/86	WERNER, T.	DISCUSS LWF-RE CONSTRUCTION AND FINANCING ARRANGEMENTS AT VARIOUS PLANTS.	NE		MULTIPLE COUNTRIES - FRG, FRANCE, AND SWITZERLAND. EXACT IN-COUNTRY DATES TO BE DETERMINED.
NE-40	6	PARIS	FRANCE	02/18/86 02/21/86	MCPHERSON, D.	PARTICIPATE IN ANNUAL OECD-LOFT MANAGEMENT BOARD MEETING. DIRECT MEETING AGENDA PRESENTATIONS AND IMPLEMENT DIRECTIONS DECIDED AT MEETINGS.	NE	2252.00	MULTIPLE COUNTRIES - FRANCE AND ITALY. LEAD TEAM OF TWO DOE EMPLOYEES AND ONE CONTRACTOR TO LOFT MANAGEMENT BOARD MEETING.
NE-40	6	ROME	ITALY	02/21/86 02/28/86	MCPHERSON, D.	REPRESENT DOE AT THE LWR AEROSOL CONTAINMENT EXPERIMENT (LACE) BOARD MEETING.	NE		MULTIPLE COUNTRIES - FRANCE AND ITALY. LEAD TEAM OF TWO DOE EMPLOYEES AND ONE CONTRACTOR TO LOFT MANAGEMENT BOARD MEETING.
NE-40	9	TAIPEI	TAIWAN	03/11/86 03/13/86	BUNCH, D.	DISCUSS URANIUM ENRICHMENT CONTRACT MATTERS WITH TAIWAN UTILITIES' OFFICIALS.	NE	2456.00	
NE-42	3	JAKARTA	INDONESIA	11/13/85 11/15/85	GIESSING, D.	ACCOMPANY TEAM FROM DEPTS OF COMMERCE AND STATE MAKING ARRANGEMENTS AND LAYING GROUNDWORK FOR SEMINAR ON REACTOR SALES.	DOC/NE	1150.00	MULTIPLE DESTINATIONS - INDONESIA, HONG KONG, AND KOREA. TRANSPORTATION FUNDED BY COMMERCE DEPT.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

NUCLEAR ENERGY

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
NE-42	3	VICTORIA	HONG KONG	11/18/85 11/19/85	GIESSING, D.	ACCOMPANY TEAM FROM DEPTS OF COMMERCE AND STATE MEETING WITH OFFICIALS TO OBTAIN THEIR VIEWS ON REACTOR SALES POSSIBILITIES IN THE PRC.	DOC/NE		MULTIPLE DESTINATIONS - INDONESIA, HONG KONG, AND KOREA. TRANSPORTATION FUNDED BY COMMERCE DEPT.
NE-42	3	SEOUL	KOREA	11/19/85 11/22/85	GIESSING, D.	DISCUSS REACTOR ORDERS AND KOREANS' NEEDS FOR OPERATOR TRAINING.	DOC/NE		MULTIPLE DESTINATIONS - INDONESIA, HONG KONG, AND KOREA. TRANSPORTATION FUNDED BY COMMERCE DEPT.
NE-42	4	PARIS	FRANCE	02/18/86 02/22/86	MCGOFF, D.	PARTICIPATE IN THE OECD-LOFT MANAGEMENT BOARD MEETING. DISCUSS EXTENSION OF PROJECT IN ORDER TO EXAMINE DAMAGED FUEL FROM THE FINAL EXPERIMENT, FP-2.	NE	2240.00	MEMBER OF TEAM OF TWO DOE EMPLOYEES AND ONE CONTRACTOR.
NE-43	1	TOKYO	JAPAN	10/26/85 10/29/85	ALTER, H.	LEAD DOE CONTRACTORS PRESENTING TECHNICAL REVIEW COVERING THE STATUS OF A COLLABORATIVE PROGRAM FOR IRRADIATION TESTING IN US EBR-II REACTOR.	NE	2861.00	
NE-43	1	MITO	JAPAN	10/29/85 10/31/85	ALTER, H.	LEAD DOE CONTRACTORS PRESENTING TECHNICAL REVIEW COVERING THE STATUS OF A COLLABORATIVE PROGRAM FOR IRRADIATION TESTING IN US EBR-II REACTOR.	NE		
NE-50	11	PARIS	FRANCE	11/18/85 11/24/85	GRIFFITH, J.	REPRESENT DOE AT ANNUAL MEETING OF NEA COMMITTEE FOR THE SAFETY OF NUCLEAR INSTALLATIONS. ATTEND LOFT MANAGEMENT BOARD MEETING.	NE	1422.00	DELEGATION CONSISTS OF TWO DOE EMPLOYEES AND ONE CONTRACTOR.
NE-50	13	TOKYO	JAPAN	03/17/86 03/19/86	CHITWOOD, R.	ATTEND SPECIALIST' MEETING ON CRITICALITY DATA DEVELOPMENT.	NE	3500.00	MULTIPLE CITIES - TOKYO, MITO, AND TOKAI. LEAD TWO CONTRACTORS.
NE-50	13	MITO	JAPAN	03/20/86 03/21/86	CHITWOOD, R.	MEET WITH GOVERNMENT/INDUSTRY OFFICIALS TO DISCUSS CRITICALITY DATA DEVELOPMENT.	NE		MULTIPLE CITIES - TOKYO, MITO, AND TOKAI. LEAD TWO CONTRACTORS.
NE-50	13	TOKAI	JAPAN	03/21/86 03/22/86	CHITWOOD, R.	MEET WITH GOVERNMENT/INDUSTRY OFFICIALS TO DISCUSS CRITICALITY DATA DEVELOPMENT.	NE		MULTIPLE CITIES - TOKYO, MITO, AND TOKAI. LEAD TWO CONTRACTORS.
NE-50	14	VIENNA	AUSTRIA	03/31/86 03/31/86	GROSSMAN, N.	ESTABLISH PROCEDURAL/TOPICAL DETAILS FOR TECHNOLOGY TRANSFER PROGRAMS .	NE	2500.00	DATES TO BE DETERMINED.
NE-50	15	TOKYO	JAPAN	03/31/86 03/31/86	BIGELOW, C.	DISCUSS PNC JCC AGREEMENTS ON BELOWS DESIGN AND GENERAL SEISMIC CRITERIA.	NE	3000.00	DATES TO BE DETERMINED.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			NUCLEAR ENERGY						
NE-50	17	PARIS	FRANCE	02/20/86 02/28/86	CROSSON, R.	ATTEND MEETING OF WORKING GROUP FOR PLANT EXPERIENCE.	NE	2500.00	MULTIPLE COUNTRIES - FRANCE AND UK. SCHEDULED FOR LATE FEBRUARY OR EARLY MARCH.
NE-50	17	LONDON	UK	02/28/86 02/28/86	CROSSON, R.	PARTICIPATE IN WORKING GROUP DISCUSSIONS ON PLANT EXPERIENCE.	NE		MULTIPLE COUNTRIES - FRANCE AND UK. SCHEDULED FOR LATE FEBRUARY OR EARLY MARCH.
NE-522	1	GENEVA	SWITZERLAND	03/31/86 04/05/86	BENNETT, G.	ATTEND UN COMMITTE ON THE PEACEFUL USES OF OUTER SPACE LEGAL SUBCOMMITTEE AND WORKING GROUP MEETINGS ON NUCLEAR POWER SOURCES IN OUTER SPACE.	NE	2347.00	
NE-531	1	MADRID	SPAIN	12/08/85 12/14/85	MILLUNZI, A.	CONFER ON PROBABILISTIC RISK ASSESSMENT TOPICS IN FULFILLMENT OF US OBLIGATIONS UNDER US/SPAIN PROGRAM ON FRIENDSHIP, DEFENSE AND COOPERATION.	STATE	0.00	FUNDED BY DEPARTMENT OF STATE.
NE-542	1	MADRID	SPAIN	11/03/85 11/09/85	HENNING, P.	HEAD DOE PARTICIPATION IN MEETING OF THE NUCLEAR ENERGY AGENCY COMMITTEE ON REACTOR PHYSICS .	NE	1144.00	
NE-551	2	MITO	JAPAN	12/04/85 12/08/85	BASTIN, C.	HOLD TECHNICAL PRESENTATIONS AND DISCUSSIONS IN THE AREA OF REMOTE SYSTEMS AND EQUIPMENT TECHNOLOGY.	NE	3650.00	MULTIPLE CITIES - MITO, TOKYO, OSAKA, AND NAGASAKI.
NE-551	2	TOKYO	JAPAN	12/08/85 12/10/85	BASTIN, C.	LEAD DELEGATION HOLDING TECHNICAL PRESENTATIONS AND DISCUSSIONS IN THE AREA OF REMOTE SYSTEMS AND EQUIPMENT TECHNOLOGY.	NE		MULTIPLE CITIES - MITO, TOKYO, OSAKA, AND NAGASAKI.
NE-551	2	OSAKA	JAPAN	12/10/85 12/10/85	BASTIN, C.	VIEW DEMONSTRATION OF PROTOTYPE II SINGLE ARM AND HOLD TECHNICAL DISCUSSIONS.	NE		MULTIPLE CITIES - MITO, TOKYO, OSAKA, AND NAGASAKI.
NE-551	2	NAGASAKI	JAPAN	12/10/85 12/12/85	BASTIN, C.	VIEW DEMONSTRATION OF REMOTE CONNECTOR TEST STAND. HOLD TECHNICAL DISCUSSIONS. TOUR REMOTE SYSTEMS FACILITIES.	NE		MULTIPLE CITIES - MITO, TOKYO, OSAKA, AND NAGASAKI.
NE-551	2	TOKYO	JAPAN	12/12/85 12/13/85	BASTIN, C.	SUMMARIZE DISCUSSIONS AND PREPARE RECORD OF DISCUSSION AND RECOMMENDATIONS FOR THE SEVENTH TECHNICAL SPECIALISTS' MEETING.	NE		MULTIPLE CITIES - MITO, TOKYO, OSAKA, AND NAGASAKI.
NE-551	4	TOKAI	JAPAN	02/18/86 02/20/86	BAILEY, D.	TOUR FACILITIES DEDICATED TO FUEL RECYCLE ACTIVITIES.	NE	2925.00	MULTIPLE CITIES - TOKYO AND TOKAI. IN TOKYO TWICE. DATES TO BE DETERMINED.
NE-551	4	TOKYO	JAPAN	02/20/86 02/26/86	BAILEY, D.	HOLD ADMINISTRATIVE DISCUSSIONS ON CRITICALITY DATA DEVELOPMENT.	NE		MULTIPLE CITIES - TOKYO AND TOKAI. IN TOKYO TWICE. DATES TO BE DETERMINED.
						TOTAL		104000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

OAK RIDGE OPERATIONS OFFICE

** TRAVEL FOR OFFICE OR

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
OR	21	VIENNA	AUSTRIA	10/14/85 10/18/85	HALL, H.	ATTEND IAEA-INIS INPUT WORKSHOP.	NA	3200.00	
OR	21	KARLSRUHE	FRG	10/21/85 10/26/85	HALL, H.	REVIEW CATALOGING PROCEDURES AND PROCESSING CYCLE.	NA		
OR	24	VIENNA	AUSTRIA	11/08/85 11/30/85	HUGHES, T.	PROVIDE ASSISTANCE IN ORGANIZING, CONDUCTING, AND DOCUMENTING MEETING OF THE FIFTH ADVISORY COMMITTEE FOR INIS.	IAEA/NA	0.00	FUNDED BY IAEA.
OR	25	TOKYO	JAPAN	11/05/85 11/09/85	HALL, J.	DISCUSSION WITH JAPANESE OFFICIALS REGARDING DOE URANIUM ENRICHMENT PROGRAM.	NE	2800.00	
OR	26	LONDON	UK	11/14/85 11/17/85	STUBER, C.	DISCUSS IMPENDING INFORMATION AGREEMENT WITH THE IEA.	NA	2200.00	
OR	26	VIENNA	AUSTRIA	11/17/85 11/23/85	STUBER, C.	PARTICIPATE IN THE 5TH ADVISORY COMMITTEE MEETING FOR THE INTERNATIONAL NUCLEAR INFORMATION SYSTEM.	NA		
OR	27	TOKYO	JAPAN	12/02/85 12/05/85	COX, D.	ATTEND OFFICIAL OPENING OF MARTIN MARIETTA FAR EAST OFFICE SUPPORTING DOE URANIUM ENRICHMENT PROGRAM. DISCUSS DOE ENRICHMENT PROGRAM.	NE	5200.00	MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. MEMBER OF TEAM SIX DOE EMPLOYEEYS AND CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	27	SENDAI	JAPAN	12/05/85 12/06/85	COX, D.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. MEMBER OF TEAM SIX DOE EMPLOYEEYS AND CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	27	TOYAMA	JAPAN	12/09/85 12/11/85	COX, D.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. MEMBER OF TEAM SIX DOE EMPLOYEEYS AND CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	27	SEOUL	KOREA	12/12/85 12/13/85	COX, D.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND KOREA. MEMBER OF TEAM SIX DOE EMPLOYEEYS AND CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	31	TOKYO	JAPAN	12/03/85 12/04/85	RICHARDSON, M.	ATTEND OFFICIAL OPENING OF MARTIN MARIETTA FAR EAST OFFICE SUPPORTING DOE URANIUM ENRICHMENT PROGRAM. DISCUSS DOE ENRICHMENT PROGRAM.	NE	5200.00	MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			OAK RIDGE OPERATIONS OFFICE						
OR	31	TAKAMATSU	JAPAN	12/04/85 12/05/85	RICHARDSON, M.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
OR	31	FUKUOKA	JAPAN	12/05/85 12/06/85	RICHARDSON, M.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
OR	31	OSAKA	JAPAN	12/09/85 12/10/85	RICHARDSON, M.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
OR	31	NAGOYA	JAPAN	12/10/85 12/11/85	RICHARDSON, M.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
OR	31	TAIPEI	TAIWAN	12/12/85 12/13/85	RICHARDSON, M.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF DOE DELEGATION. APPROVED BY TRAVEL BOARD.
OR	32	TOKYO	JAPAN	12/03/85 12/04/85	HALL, J.	ATTEND OFFICIAL OPENING OF MARTIN MARIETTA FAR EAST OFFICE SUPPORTING DOE URANIUM ENRICHMENT PROGRAM. DISCUSS DOE ENRICHMENT PROGRAM.	NE	5200.00	MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF TEAM OF SIX DOE EMPLOYEES AND A CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	32	TAKAMATSU	JAPAN	12/04/85 12/05/85	HALL, J.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF TEAM OF SIX DOE EMPLOYEES AND A CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	32	FUKUOKA	JAPAN	12/05/85 12/06/85	HALL, J.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF TEAM OF SIX DOE EMPLOYEES AND A CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	32	OSAKA	JAPAN	12/09/85 12/10/85	HALL, J.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF TEAM OF SIX DOE EMPLOYEES AND A CONTRACTOR. APPROVED BY TRAVEL BOARD.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			OAK RIDGE OPERATIONS OFFICE						
OR	32	NAGOYA	JAPAN	12/10/85 12/11/85	HALL, J.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF TEAM OF SIX DOE EMPLOYEES AND A CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	32	TAIPEI	TAIWAN	12/12/85 12/13/85	HALL, J.	DISCUSS DOE ENRICHMENT PLANS & CONTRACT ISSUES.	NE		MULTIPLE COUNTRIES AND CITIES - JAPAN AND TAIWAN. MEMBER OF TEAM OF SIX DOE EMPLOYEES AND A CONTRACTOR. APPROVED BY TRAVEL BOARD.
OR	33	PARIS	FRANCE	01/12/86 01/17/86	COYNE, J.	ATTEND MEETING OF IEA EXPERT INFO POLICY AND COMMITTEE ON ENERGY R&D TO FINALIZE IMPLEMENTING AGREEMENT FOR A CENTRAL TECHNICAL INFO PROGRAM FOR IEA.	MA	900.00	
OR	35	MADRID	SPAIN	01/28/86 01/30/86	STROUD, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE	4600.00	MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	35	PARIS	FRANCE	01/30/86 02/01/86	STROUD, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	35	BRUSSELS	BELGIUM	02/01/86 02/03/86	STROUD, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	35	BERN	SWITZERLAND	02/03/86 02/05/86	STROUD, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	36	MADRID	SPAIN	01/28/86 01/30/86	WALLING, K.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE	4600.00	MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	36	PARIS	FRANCE	01/30/86 02/01/86	WALLING, K.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	36	BRUSSELS	BELGIUM	02/01/86 02/03/86	WALLING, K.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			OAK RIDGE OPERATIONS OFFICE						
OR	36	BERN	SWITZERLAND	02/03/86 02/03/86	WALLING, K.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES - SPAIN, FRANCE, BELGIUM, AND SWITZERLAND.
OR	37	MALMOE	SWEDEN	01/28/86 01/30/86	PARKS, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE	3400.00	MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
OR	37	PARIS	FRANCE	01/30/86 02/02/86	PARKS, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
OR	37	BRUSSELS	BELGIUM	02/02/86 02/05/86	PARKS, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
OR	37	BELGRADE	YUGOSLAVIA	02/05/86 02/06/86	PARKS, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
OR	37	ZAGREB	YUGOSLAVIA	02/06/86 02/07/86	PARKS, J.	DISCUSS URANIUM ENRICHMENT MARKETING INCLUDING US CONTRACT AND INCENTIVE PRICING OFFER.	NE		MULTIPLE COUNTRIES AND CITIES - SPAIN, FRANCE, BELGIUM, SWITZERLAND, AND YUGOSLAVIA.
OR	39	SEOUL	KOREA	02/05/86 02/09/86	COX, B.	DISCUSS URANIUM ENRICHMENT RELATED ISSUES INVOLVING INCENTIVE PRICE ACCEPTANCE.	NE	6000.00	MULTIPLE COUNTRIES - KOREA AND JAPAN.
OR	39	TOKYO	JAPAN	02/09/86 02/15/86	COX, B.	DISCUSS URANIUM ENRICHMENT RELATED ISSUES INVOLVING INCENTIVE PRICE ACCEPTANCE.	NE		MULTIPLE COUNTRIES - KOREA AND JAPAN.
OR	40	TOKYO	JAPAN	02/08/86 02/11/86	BARRON, D.	DISCUSS URANIUM ENRICHMENT RELATED ISSUES INVOLVING INCENTIVE PRICE ACCEPTANCE.	NE	3900.00	MEMBER OF TEAM OF THREE DOE EMPLOYEES AND TWO CONTRACTORS TRAVELING TO DIFFERENT COUNTRIES AND CITIES.
						TOTAL		47000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE PET			PITTSBURGH ENERGY TECHNOLOGY CENTER						
PETC	12	BEIJING	PRC	11/02/85 11/09/85	LACEY, J.	EVALUATE DIRECT COAL LIQUEFACTION TECHNOLOGY AS TECHNICAL ADVISOR/TECHNICAL COMMITTEE MEMBER.	UNIDO/FE	0.00	FUNDED BY UNITED NATIONS.
PETC	13	SYDNEY	AUSTRALIA	10/24/85 11/04/85	BOCKRATH, B.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE.	FE	2700.00	
PETC	14	SEOUL	KOREA	10/13/85 10/20/85	CHUN, S.	ATTEND SECOND US/KOREA JOINT WORKSHOP ON COAL UTILIZATION TECHNOLOGY.	FE	3700.00	
PETC	14	TOKYO	JAPAN	10/20/85 10/25/85	CHUN, S.	DISCUSS CURRENT STATUS OF DIRECT COAL LIQUEFACTION IN US.	FE		
PETC	14	SYDNEY	AUSTRALIA	10/25/85 11/02/85	CHUN, S.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE.	FE		
PETC	15	SYDNEY	AUSTRALIA	10/27/85 11/02/85	RETCOFSKY, H.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE.	FE	2950.00	
PETC	15	NORTH RYDE	AUSTRALIA	11/02/85 11/06/85	RETCOFSKY, H.	VISIT RESEARCH LABORATORIES FOR TECHNOLOGY TRANSFER ON COAL SCIENCE.	FE		
PETC	16	SYDNEY	AUSTRALIA	10/28/85 11/02/85	RAETHER, J.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE. DISCUSS COAL CONVERSION.	FE	2470.00	
PETC	16	MELBOURNE	AUSTRALIA	11/03/85 11/04/85	RAETHER, J.	VISIT BROWN COAL LIQUEFACTION PLANT.	FE		
PETC	17	SYDNEY	AUSTRALIA	10/27/85 11/02/85	WHITE, C.	ATTEND INTERNATIONAL CONFERENCE ON COAL SCIENCE.	FE	2950.00	
PETC	17	NORTH RYDE	AUSTRALIA	11/02/85 11/04/85	WHITE, C.	VISIT THE RESEARCH LABORATORIES FOR TECHNOLOGY TRANSFER ON COAL SCIENCE.	FE		
PETC	18	MELBOURNE	AUSTRALIA	10/29/85 11/05/85	HICKERSON, J.	ATTEND 2ND EXECUTIVE COMMITTEE MEETING OF IEA COAL COMBUSTION SCIENCE PROGRAMME.	FE	2420.00	
PETC	18	NORTH RYDE	AUSTRALIA	11/05/85 11/09/85	HICKERSON, J.	DISCUSS US-AUSTRALIA COLLABORATIVE COAL SCIENCE RESEARCH PROJECTS. VISIT SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION.	FE		
PETC	20	LONDON	UK	10/30/85 10/31/85	GIBSON, G.	DISCUSS EFFORTS BEING MADE IN THE INTEGRATION OF PROCESS CONTROL WITH QUALITY CONTROL.	FE	2000.00	
PETC	20	CHELTENHAM	UK	10/28/85 10/29/85	GIBSON, G.	PRESENT A SEMINAR ON "THE ON-LINE ANALYSIS OF FISHER TROPSCH PRODUCTS" AND DISCUSS NEW WORK IN THIS AREA.	FE		

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			PITTSBURGH ENERGY TECHNOLOGY CENTER						
PETC	20	DORSET	UK	10/22/85 10/25/85	GIBBON, G.	PRESENT KEYNOTE LECTURE AT THE ANALYTICAL DIVISION, ROYAL SOCIETY OF CHEMISTRY, RESIDENTIAL SEMINAR ON "THE INTEGRATED APPROACH TO LAB AUTOMATION".	FE		
PETC	20	EDINBURGH	UK	10/31/85 11/03/85	GIBBON, G.	PRESENT A SEMINAR ON "THE SMALL SCALE COMBUSTION OF SYNTHETIC FUELS" AT THE UNIVERSITY OF EDINBURGH.	FE		
PETC	21	TOKYO	JAPAN	10/20/85 10/27/85	TORKOS, T.	ATTEND THE SECOND US-JAPAN JOINT TECHNICAL MEETING ON COAL LIQUEFACTION.	FE	2950.00	
PETC	22	TOKYO	JAPAN	10/20/85 10/27/85	SANTORE, R.	ATTEND SECOND US-JAPAN JOINT TECHNICAL MEETING ON COAL LIQUEFACTION.	FE	2950.00	
PETC	23	TOKYO	JAPAN	10/20/85 10/27/85	MAZZOCCO, N.	ATTEND SECOND US-JAPAN JOINT TECHNICAL MEETING ON COAL LIQUEFACTION.	FE	2950.00	
PETC	24	COLOGNE	FRG	12/09/85 12/13/85	SCHEHL, R.	PARTICIPATE AS DOE REP TO STEERING AND MANAGEMENT COMMITTEES MEETINGS ON US/FRG BILATERAL PROJECT ON METHANOL-TO-GASOLINE/OLEFINS.	FE	1550.00	
PETC	25	NEW DELHI	INDIA	12/03/85 12/08/85	BIENSTOCK, D.	LEAD DELEGATION TO THE THIRD WORKSHOP IN THE BIOMASS AND COAL CONVERSION PROGRAM. MEET WITH AID OFFICIALS. VISIT TECHNICAL INSTITUTES.	AID	0.00	MULTIPLE CITIES. DELEGATION SPONSORED BY AID REDUCED FROM NINE TO FIVE MEMBERS (ONE DOE).
PETC	25	DHANBAD	INDIA	12/08/85 12/10/85	BIENSTOCK, D.	HOLD DISCUSSIONS AT CENTRAL FUEL RESEARCH INSTITUTE.	AID		MULTIPLE CITIES. DELEGATION SPONSORED BY AID REDUCED FROM NINE TO FIVE MEMBERS (ONE DOE).
PETC	25	TIRUCHIRAPALLI	INDIA	12/12/85 12/15/85	BIENSTOCK, D.	MEET WITH OFFICIALS FROM BHARAT HEAVY ELECTRICALS.	AID		MULTIPLE CITIES. DELEGATION SPONSORED BY AID REDUCED FROM NINE TO FIVE MEMBERS (ONE DOE).
PETC	25	NEW DELHI	INDIA	12/15/85 12/16/85	BIENSTOCK, D.	MEET WITH AID OFFICIALS FOR DEBRIEFING ON VISIT.	AID		MULTIPLE CITIES. DELEGATION SPONSORED BY AID REDUCED FROM NINE TO FIVE MEMBERS (ONE DOE).
PETC	25	HYDERABAD	INDIA	12/10/85 12/12/85	BIENSTOCK, D.	VISIT REGIONAL RESEARCH INSTITUTE AND BHARAT HEAVY ELECTRICALS FACILITY FOR DISCUSSION.	AID		MULTIPLE CITIES. DELEGATION SPONSORED BY AID REDUCED FROM NINE TO FIVE MEMBERS (ONE DOE).

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			PITTSBURGH ENERGY TECHNOLOGY CENTER						
PETC	26	PUERTO LA CRUZ	VENEZUELA	02/23/86 02/27/86	CHAN, S.	PROVIDE INFO RELATIVE TO COAL/OIL & PETROLEUM/COKE CO-PROCESSING AT US-VENEZUELA JOINT STEERING COMMITTEE MTG ON COOPERATION IN ENHANCED OIL RECOVERY.	FE	1300.00	MEMBER OF TEAM OF FOUR DOE EMPLOYEES.
PETC	28	MEXICO CITY	MEXICO	03/24/86 03/26/86	SMITH, D.	DISCUSS ANNEX V TO THE MOU BETWEEN US/MEXICO. REVIEW STATUS OF COAL/HEAVY OIL COPROCESSING FUNDING IN DOE.	FE	800.00	
						TOTAL		32000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE PE-			POLICY, SAFETY, AND ENVIRONMENT (Environment, Safety, and Health)						
PE-16	9	GENEVA	SWITZERLAND	10/14/85 10/19/85	WILLIAMS, E.	PARTICIPATE IN EXECUTIVE BODY FOR THE COVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION, WORKING GROUP ON NITROGEN OXIDES FIRST SESSION.	STATE	0.00	FUNDED BY STATE DEPT.
							TOTAL	-0-	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE RL			RICHLAND OPERATIONS OFFICE						
RL	9	PARIS	FRANCE	11/11/85 11/13/85	MILLER, C.	ATTEND OECD/NEA TECHNICAL ADVISORY GROUP MEETING CONCERNING NUCLEAR INSTALLATION DECOMMISSIONING PROJECTS.	NE	3200.00	MULTIPLE COUNTRIES AND CITIES - FRANCE, FRG, AND UK.
RL	9	LA HAGUE	FRANCE	11/13/85 11/16/85	MILLER, C.	JOIN UK OFFICIALS IN DISCUSSIONS AND TOURS AT AT-1 AND ELAN IIB FACILITIES.	NE		MULTIPLE COUNTRIES AND CITIES - FRANCE, FRG, AND UK.
RL	9	MARCOULE	FRANCE	11/16/85 11/19/85	MILLER, C.	TOUR NUCLEAR RESEARCH CENTER FOR DISCUSSIONS AND EXCHANGE OF INFORMATION ON DECOMMISSIONING TECHNOLOGY.	NE	3200.00	MULTIPLE COUNTRIES AND CITIES - FRANCE, FRG, AND UK.
RL	9	KARLSRUHE	FRG	11/19/85 11/20/85	MILLER, C.	DISCUSS DECOMMISSIONING TECHNOLOGY TRANSFER PROGRAM. TOUR NUCLEAR RESEARCH CENTER.	NE		MULTIPLE COUNTRIES AND CITIES - FRANCE, FRG, AND UK.
RL	9	LONDON	UK	11/20/85 11/23/85	MILLER, C.	TOUR WINDSCALE NUCLEAR LABS AND CENTRAL ELECTRICITY GENERATING BOARD REACTOR REPAIR FACILITIES. EXCHANGE INFORMATION ON DECOMMISSIONING TECHNOLOGY.	NE		MULTIPLE COUNTRIES AND CITIES - FRANCE, FRG, AND UK.
RL	10	MANCHESTER	UK	12/07/85 12/11/85	HUNTER, J.	GATHER INFORMATION THRU TECHNICAL DISCUSSIONS AND PLANT VISITS ON THE EFFECTS OF NEUTRON IRRADIATION AND OXIDIZING ENVIRONMENTS ON MODERATE GRAPHITE.	DP	3000.00	MULTIPLE COUNTRIES - UK, FRG AND NETHERLANDS. FIVE CONTRACTORS SCHEDULED TO PARTICIPATE. DP DELETED A CONTRACTOR. ADDITIONAL JUSTIFICATION PROVIDED.
RL	10	COLOGNE	FRG	12/11/85 12/12/85	HUNTER, J.	HOLD TECHNICAL DISCUSSIONS ON GRAPHITE DISTORTION, CREEP AND PROPERTY CHANGES.	DP		MULTIPLE COUNTRIES - UK, FRG AND NETHERLANDS. FIVE CONTRACTORS SCHEDULED TO PARTICIPATE. DP DELETED A CONTRACTOR. ADDITIONAL JUSTIFICATION PROVIDED.
RL	10	PETTEN	NETHERLANDS	12/12/85 12/14/85	HUNTER, J.	HOLD TECHNICAL DISCUSSIONS ON GRAPHITE IRRADIATION AND TESTING.	DP		MULTIPLE COUNTRIES - UK, FRG AND NETHERLANDS. FIVE CONTRACTORS SCHEDULED TO PARTICIPATE. DP DELETED A CONTRACTOR. ADDITIONAL JUSTIFICATION PROVIDED.
RL	11	HANOVER	FRG	03/31/86 03/31/86	OLSON, D.	ATTEND INTERNATIONAL SYMPOSIUM ON REPOSITORY SITE SELECTION AND TECHNICAL DESIGN.	RW	2400.00	DATES TO BE DETERMINED.
RL	12	MONTREAL	CANADA	03/10/86 03/12/86	MILLER, C.	ATTEND MEETING OF TECHNICAL ADVISORY GROUP OF OECD/NEA COOPERATIVE PROGRAMME ON DECOMMISSIONING.	NE	700.00	OFFICIAL DOE REPRESENTATIVE FOR MEETING.

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
			RICHLAND OPERATIONS OFFICE						
RL	13	QUEBEC	CANADA	03/31/86 03/31/86	SCHREIBER, J.	PARTICIPATE IN INTERNATIONAL OECD/NEA TECHNICAL EXCHANGE.	NE	700.00	DATES TO BE DETERMINED.
RL	14	VIENNA	AUSTRIA	03/04/86 03/07/86	SCHREIBER, J.	PARTICIPATE IN IAEA MEETING REGARDING SPENT FUEL.	NE	2700.00	
						TOTAL		13000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE SAN			SAN FRANCISCO OPERATIONS OFFICE						
SAN	6	STOCKHOLM	SWEDEN	10/07/85 10/11/85	HUGHEY, R.	ATTEND IEA SOLAR HEATING AND COOLING PROGRAM MEETING.	SAN	1360.00	
SAN	8	CARACAS	VENEZUELA	02/10/86 02/13/86	PETERSON, G.	REVIEW PROGRESS ON COMPLETION OF TASKS OF THIRD AMENDMENT AND EXTENSION TO ANNEX IV OF THE AGREEMENT, "ENCHANCED OIL RECOVERY THERMAL PROCESSES."	FE	1400.00	
SAN	9	PONAPE	MICRONESIA	03/05/86 03/07/86	KING, F.	DISCUSS ENERGY GRANT EVALUATION OF PROGRAMS AND PROJECTS.	CE	2600.00	MULTIPLE DESTINATIONS - COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS, TRUST TERRITORIES, AND GUAM.
SAN	9	KOROR	REPUBLIC OF PALAU	03/07/86 03/10/86	KING, F.	DISCUSS ENERGY GRANT EVALUATION OF PROGRAMS AND PROJECTS.	CE		MULTIPLE DESTINATIONS - COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS, TRUST TERRITORIES, AND GUAM.
SAN	9	AGANA	GUAM	03/10/86 03/12/86	KING, F.	DISCUSS ENERGY GRANT EVALUATION OF PROGRAMS AND PROJECTS.	CE		MULTIPLE DESTINATIONS - COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS, TRUST TERRITORIES, AND GUAM.
SAN	9	SAIPAN	MARIANA ISLANDS	03/12/86 03/14/86	KING, F.	DISCUSS ENERGY GRANT EVALUATION OF PROGRAMS AND PROJECTS.	CE		MULTIPLE DESTINATIONS - COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS, TRUST TERRITORIES, AND GUAM.
						TOTAL		5000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE SR			SAVANNAH RIVER OPERATIONS OFFICE						
SR	4	TAIPEI	TAIWAN	12/11/85 12/23/85	GOLDSTON, W.	DISCUSS HANDLING OF RESEARCH REACTOR SPENT FUEL FOR FUEL MOVEMENT PROJECT.	DP	3700.00	
SR	5	TAIPEI	TAIWAN	11/11/85 12/13/85	PEARSON, W.	DISCUSS HANDLING OF RESEARCH REACTOR SPENT FUEL FOR FUEL MOVEMENT PROJECT.	DP	4000.00	
						TOTAL		8000	

FOREIGN TRAVEL SYSTEM

Planned Travel by Office

Office	Trip #	City	Country	Travel Dates	Traveler	Purpose	Source of Funding	Estimated Cost	Remarks
** TRAVEL FOR OFFICE WAP			WESTERN AREA POWER ADMINISTRATION						
WAPA	6	ERLANGEN	FRG	12/10/85 12/17/85	JOHNSON, R.	PARTICIPATE IN HIGHLY TECHNICAL SIMULATOR STUDIES DEMONSTRATING CONTRACTOR COMPLIANCE WITH THE SPECIFICATION IN THE KEY AREA OF CONVERTER CONTROLS.	WAPA	2000.00	MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR MEMBERS PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	6	LINZ	AUSTRIA	12/17/85 12/21/85	JOHNSON, R.	INSPECT FACTORY SUBCONTRACTED TO MANUFACTURE THE SIDNEY CONVERTER STATION FILTER REACTORS AND SMOOTHING REACTORS.	WAPA		MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR MEMBERS PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	7	ERLANGEN	FRG	12/10/85 12/17/85	KLEMM, N.	PARTICIPATE IN HIGHLY TECHNICAL SIMULATOR STUDIES DEMONSTRATING CONTRACTOR COMPLIANCE WITH THE SPECIFICATION IN THE KEY AREA OF CONVERTER CONTROLS.	WAPA	1650.00	MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	7	LINZ	AUSTRIA	12/17/85 12/21/85	KLEMM, N.	INSPECT FACTORY SUBCONTRACTED TO MANUFACTURE THE SIDNEY CONVERTER STATION FILTER REACTORS AND SMOOTHING REACTORS.	WAPA		MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	8	ERLANGEN	FRG	12/10/85 12/17/85	TORGERSON, D.	PARTICIPATE IN HIGHLY TECHNICAL SIMULATOR STUDIES DEMONSTRATING CONTRACTOR COMPLIANCE WITH THE SPECIFICATION IN THE KEY AREA OF CONVERTER CONTROLS.	WAPA	1600.00	MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	8	LINZ	AUSTRIA	12/17/85 12/21/85	TORGERSON, D.	INSPECT FACTORY SUBCONTRACTED TO MANUFACTURE THE SIDNEY CONVERTER STATION FILTER REACTORS AND SMOOTHING REACTORS.	WAPA		MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	9	LINZ	AUSTRIA	12/17/85 12/21/85	MCKENNA, S	INSPECT FACTORY SUBCONTRACTED TO MANUFACTURE THE SIDNEY CONVERTER STATION FILTER REACTORS AND SMOOTHING REACTORS.	WAPA	1600.00	MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
WAPA	9	ERLANGEN	FRG	12/10/85 12/17/85	MCKENNA, S	PARTICIPATE IN HIGHLY TECHNICAL SIMULATOR STUDIES DEMONSTRATING CONTRACTOR COMPLIANCE WITH THE SPECIFICATION IN THE KEY AREA OF CONVERTER CONTROLS.	WAPA		MULTIPLE COUNTRIES - FRG AND AUSTRIA. TEAM OF FOUR PREVIOUSLY APPROVED. TRAVEL RESCHEDULED FROM AUGUST.
						TOTAL		7000	
						GRAND TOTAL		653000	

Mr. WATKINS. And include where these trips are going. I'm concerned because it seems like we're more concerned about overseas activities instead of taking care of some of the hard working taxpayers in this country. My people are getting upset about the Gramm-Rudman cuts of important programs. The Administration has proposed a lot of cuts.

I'd like for you to list the length of the foreign travel and if there were any extensions asked for personal leave. I think there's a lot of money that could be utilized to help meet some of the needs of people in our part of the country.

Could you provide that as quickly as possible?

Ms. HESSE. Mr. Watkins, we would be pleased to provide that. I would like to make one comment, if I could, and that's that Secretary Herrington has been very concerned about foreign travel and has, in fact, since he's been at the Department of Energy, reviewed foreign travel very carefully. I think that we have reduced foreign travel considerably, probably by 50 percent, since he has come to the Department.

I must also add, though, that energy is an international issue, and that we have many international cooperative R&D agreements with various countries.

Mr. WATKINS. It's an issue in the 3rd District of Oklahoma, too, I can assure you. We're going busted today because some of the policies are bankrupt. It's not good to hear the pain of people who are losing everything while we're spending the taxpayers' money overseas. There may have to be a tremendous reduction in the administrative activity of the Department, as far as I'm concerned.

When I can't get certain decisions made or certain things need to be done—I think they understand where I'm coming from and why. I'd appreciate you providing those things for the record. And if there's any questions, I hope you'll feel free to contact me.

Mr. Chairman, that's all I basically have. And I thank you for providing the opportunity.

Mr. BEVILL. Well, Madam Secretary, we appreciate the good job you're doing. So, if there's no further questions——

Mr. MYERS. Mr. Chairman?

Mr. BEVILL. Yes?

Mr. MYERS. I have some questions for Mrs. Smith. She had to leave to go to the floor. I have a couple questions for the record also.

Mr. BEVILL. Yes. We each have questions that I'm sure we're going to be submitting for answer on the record. So, thank you very much.

And next we have the Federal Energy Regulatory Commission.

[Questions and answers for the record and the statements previously referred to follow:]

Questions and Answers for the Record

APPROPRIATION LANGUAGE

Mr. BEVILL. Please explain the rationale for changing the appropriation language for Departmental Administration.

Ms. HESSE. The FY 1986 Appropriation Language adopted by the Congress differed slightly from the President's Budget. OMB counsel indicated that we could not present the account on a net of revenues basis if the FY 1986 Appropriation Language were used. We therefore revised it to the proposal you now have before you.

MANAGEMENT OF DEOBLIGATIONS

Mr. BEVILL. The budget indicates that there will be savings of $6,000,000 in FY 1986 and FY 1987 from the management of deobligations. Please explain this effort.

Ms. HESSE. This effort results from the Department's implementation of management initiatives as part of the President's Reform 88 Program. Throughout the year, deobligations may occur due to contract close-outs, contractor defaults, or other instances of contractural dollar reductions, such as cost disallowances based on audit results. To the extent these deobligations are not necessary to support the prior year's program, these amounts will be used to offset the budget authority requirements for the fiscal year in which they are anticipated to occur.

Mr. BEVILL. What is the magnitude of obligations in Departmental Administration that are subject to deobligation management?

Ms. HESSE. Essentially all of the prior year deobligations that occur in the Departmental Administration appropriation occur in support services. All prior year deobligations that occur in this area come under our deobligation management and are subject to deobligation policies. Deobligations in FY 1985 were $3.8 million. As of January of this year, the Departmental Administration appropriation has deobligated $1.7 million. We expect this trend to continue in FY 1987.

UNOBLIGATED BALANCES

Mr. BEVILL. Please explain the availability of $10.5 million in unobligated balances in FY 1986. What is the expected availability of unobligated balances in FY 1987?

Ms. HESSE. The $10.5 million unobligated balances in FY 1986 result from the FY 1985 deferral and the unobligated amounts resulting from the proposed FY 1985 rescission for consultant services which was not accepted by the Congress. There are no unobligated balances projected in FY 1987. It should be noted that an error in the Budget Appendix was detected after it was printed. The Appendix incorrectly indicates an unobligated balance of $19.8 million carrying into FY 1987 and again carrying into FY 1988.

TRAVEL FUNDING

Mr. BEVILL. Please provide a detailed justification for the increase in travel funding.

Ms. HESSE. The $.5 million increase in travel will provide additonal support for the review and assessment of field programs and policy implementation, and increased support for the Departmental Training Program for advanced management and project management training programs.

STANDARD LEVEL USER CHARGES (SLUC) INCREASE

Mr. BEVILL. Please explain the increase in SLUC charges for both Headquarters and the operations offices.

Ms. HESSE. The increase at headquarters is largely the result of a rate increase of 65% for the Forrestal building. The FY 1987 SLUC rate for office space in the Forrestal building will be $24.35 per sq. ft. compared to that of $14.73 per sq. ft. in FY 1985/1986. The Germantown SLUC rate for office space will be $11.05 per sq. ft. in FY 1987, a decrease of 6% from the FY 1985/1986 rate of $11.78. The field is experiencing an increase in SLUC as a result of GSA increasing rates across the board for actual space occupied.

OPERATIONS OFFICES

Mr. BEVILL. Please provide a breakdown of salaries and contractual support for each operations office in FY 1985, FY 1986, and FY 1987.

Ms. HESSE. A breakdown of salaries and contractual support for each operations office in FY 1985, FY 1986 and FY 1987 is shown in a table I would like to insert in the record.

[The information follows:]

DOE OPERATIONS OFFICES

[Budget authority dollars in thousands and fiscal years]

Operations offices	1985	1986	1987
Chicago operations office:			
Salaries and benefits	$13,617	$13,686	$14,980
Travel	500	326	421
Support services	5,694	5,583	5,800
Capital equipment	277	267	225
Total Chicago operations office	20,088	19,862	21,426
Idaho operations office:			
Salaries and benefits	9,252	9,123	9,400
Travel	400	261	425
Support services	2,854	3,562	3,750
Capital equipment	300	289	300
Total Idaho operations office	12,806	13,235	13,875
Oak Ridge operations office:			
Salaries and benefits	19,579	19,832	20,500
Travel	400	261	337
Support services	5,554	5,776	6,288
Capital equipment	246	193	200
Total Oak Ridge operations office	25,779	26,062	27,325
Richland operations office:			
Salaries and benefits	10,440	10,604	11,021
Travel	400	261	337
Support services	3,656	3,081	3,466
Capital equipment	300	96	100
Total Richland operations office	14,796	14,042	14,924
San Francisco operations office:			
Salaries and benefits	10,767	10,455	10,966
Travel	450	294	379
Support services	4,950	4,755	5,177
Capital equipment	150	143	150
Total San Francisco operations office	16,317	15,647	16,672
Total operations offices	89,786	88,848	94,222

EMPLOYMENT ESTIMATES

Mr. BEVILL. Provide for the record a table showing current and year end planned personnel strengths for each organizational entity in the Department, including the operations offices and laboratory and contractor activity.

Ms. HESSE. Tables showing current and year end estimated employment are provided for the record.

[The information follows:]

DEPARTMENT OF ENERGY FEDERAL EMPLOYMENT

17-Mar-86

ORGANIZATION	EMPLOYMENT AS OF 3/1/86	ORGANIZATIONS' ESTIMATED EOY EMPLOYMENT
Office of the Secretary	32	37
Management & Administration	1112	1129
General Counsel	172	170
Inspector General	174	187
Congressional,Intergovt'l & Public Affairs	98	103
Hearings & Appeals	87	84
Internat'l Affairs & Energy Emergencies	126	137
Board of Contract Appeals	9	9
Minority Economic Impact	10	12
Civilian Radioactive Waste	139	132
Policy, Planning & Analysis	51	64
Environment, Safety & Health	123	134
Conservation & Renewable Energy	324	335
Energy Research	280	280
Defense Programs	440	468
Nuclear Energy	283	280
Fossil Energy	195	190
Economic Regulatory Administration	275	220
Energy Information Administration	455	479
Federal Energy Regulatory Commission	1606	1614
Subtotal	5991	6064
Albuquerque Operations Office	1365	1365
Chicago Operations Office	612	626
Richland Operations Office	322	335
Idaho Operations Office	356	354
Oak Ridge Operations Office	671	694
San Francisco Operations Office	290	289
Savannah River Operations Office	322	314
Nevada Operations Office	278	284
Subtotal	4216	4261
Southeastern Power Administration	37	41
Southwestern Power Administration	186	184
Alaska Power Administration	37	37
Bonneville Power Administration	3536	3532
Western Area Power Administration	1424	1379
Subtotal	5220	5173
Scientific & Technical Information	171	179
Pittsburgh Naval Reactors	67	79
Schnectady Naval Reactors	59	68
Naval Petroleum Reserves-Casper	13	12
Naval Petroleum Reserves-Elk Hills	66	62
Subtotal	376	400
Bartlesville Project Office	13	15
Morgantown Energy Technology Center	274	280
Pittsburgh Energy Technology Center	283	290
Subtotal	570	585
DOE TOTAL	16373	16483

DEPARTMENT OF ENERGY
CONTRACTOR EMPLOYMENT

DOE OFFICE CONTRACTOR	OPERATION	LOCATION	ST	9/30/85 ONBOARD	9/30/86 EST EMPL
ALBUQUERQUE OPERATIONS OFFICE					
BENDIX CORPORATION*	KANSAS CITY DIVISION	KANSAS CITY	MO	7,848	7335
GENERAL ELECTRIC CO.	PINELLAS PLANT	PINELLAS	FL	1,977	1977
LOVELACE MED FDN	MEDICAL EDUCATION	ALBUQUERQUE	NM	204	204
MASON & HANGER-SILAS	PANTEX PLANT	AMARILLO	TX	2,808	2773
MONSANTO RESEARCH CORP	MOUND LABORATORY	MIAMISBURG	OH	2,398	2398
ROCKWELL INTERNATIONAL	ROCKY FLATS PLANT	ROCKY FLATS	CO	6,047	5600
ROSS AVIATION, INC.		ALBUQUERQUE	NM	174	174
SANDIA CORPORATION	SANDIA NATL LAB	ALBUQUERQUE	NM	7,180	7180
SANDIA CORPORATION	SANDIA NATL LAB	LIVERMORE	CA	1,074	1074
THE ZIA CO.	MAINT & OPERATIONS	LOS ALAMOS	NM	1,763	1763
UNIV OF CALIFORNIA	LOS ALAMOS NATL LAB	LOS ALAMOS	NM	7,486	7336
FIELD OFFICE TOTAL				38,959	37,814
CHICAGO OPERATIONS OFFICE					
ASSOCIATED UNIVERSITIES	BROOKHAVEN NATL LAB	UPTON	NY	3,157	3230
IOWA STATE UNIVERSITY	AMES RESEARCH LAB	AMES	IA	512	538
MIDWEST RESEARCH INST	SOLAR ENERGY RES INST	GOLDEN	CO	475	454
PRINCETON UNIV	PRINCETN PLASM PHYS LAB	PRINCETON	NJ	1,163	1020
UNIVERSITIES RESEARCH ASSOC	FERMI NATL LAB	BATAVIA	IL	2,168	2123
UNIV OF CHICAGO	ARGONNE NATL LAB	ARGONNE	IL	3,577	3507
FIELD OFFICE TOTAL				11,052	10,872
IDAHO OPERATIONS OFFICE					
BENDIX FIELD ENGINEERING		GRAND JUNCTION	CO	330	345
EG&G, INC.	IDAHO NATL ENGRG LAB	IDAHO FALLS	ID	3,551	3490
EXXON NUCLEAR IDAHO CO.	SMC PROJECT	IDAHO FALLS	ID	181	400
MORRISON KNUDSEN CO.		IDAHO FALLS	ID	57	57
MOUNTAIN STATE ENERGY	MONTANA ENERGY RES&DEV	BUTTE	MT	144	144
WEST VALLEY NUCL SERV CO.		WEST VALLEY	NY	391	420

DEPARTMENT OF ENERGY
CONTRACTOR EMPLOYMENT

DOE OFFICE CONTRACTOR	OPERATION	LOCATION	ST	9/30/85 ONBOARD	9/30/86 EST EMPL
WESTINGHOUSE ID NUCL CO.	IDAHO NATL ENGRG LAB	IDAHO FALLS	ID	1,381	1425
FIELD OFFICE TOTAL				6,035	6,281
NAVAL PETROLEUM RESERVES OFFICE					
BECHTEL	NPR-C	ELK HILLS	CA	647	754
LAWRENCE-ALLISION ASSOC	NPR-3	CASPER	WY	182	182
FIELD OFFICE TOTAL				829	936
NEVADA OPERATIONS OFFICE					
COMPUTER SCIENCE CORP	COMPUTER CENTER	LAS VEGAS	NV	49	47
EG&G, INC.	TECHNICAL SUPPORT FAC	LAS VEGAS	NV	2,383	2366
FENIX & SCISSON, INC.	A-E DRILL & MINING	LAS VEGAS	NV	118	128
HOLMES & NARVER, INC.	PACIFIC TEST DIV	HONOLULU	HI	371	350
HOLMES & NARVER, INC.	ON-CONTINENT TEST DIV	LAS VEGAS	NV	548	565
REYNOLDS ELEC ENGRG	SUPPORT SERVICES	LAS VEGAS	NV	5,479	4998
WACKENHUT SVS INC	SECURITY GUARD SERV	LAS VEGAS	NV	378	370
FIELD OFFICE TOTAL				9,326	8,824
OAK RIDGE OPERATIONS OFFICE					
GOODYEAR ATOMIC CORP	GASEOUS DIFFUSION PL	PIKETON	OH	2,152	1874
LOCKWOOD GREENE ENGR		OAK RIDGE	TN	163	163
MARTIN MARIETTA	OAK RIDGE NATL LAB	OAK RIDGE	TN	4,917	4867
MARTIN MARIETTA	OAK RIDGE GAS DIF PL	OAK RIDGE	TN	2768	2223
MARTIN MARIETTA	PADUCAH GAS DIF PL	PADUCAH	KY	1285	1151
MARTIN MARIETTA	Y-12 PLANT	OAK RIDGE	TN	7429	7112
NLO, INC.	FEED MATERIALS PLANT	FERNALD	OH	1,214	1630
OAK RIDGE ASSOC UNIV	RESEARCH & OTHER	OAK RIDGE	TN	386	383
RMI COMPANY	FEED MATERIALS FAC	ASHTABULA	OH	120	120
RUST ENGINEERING CO.		OAK RIDGE	TN	243	236
SCIENCE APPLICATION, INC.		OAK RIDGE	TN	54	54
FIELD OFFICE TOTAL				20,731	19,813
PITTSBURGH NAVAL REACTORS OFFICE					
WESTINGHOUSE ELECTRIC CORP.	BETTIS ATOMIC POWER	PITTSBURGH	PA	2,407	2407

DEPARTMENT OF ENERGY
CONTRACTOR EMPLOYMENT

DOE OFFICE CONTRACTOR	OPERATION	LOCATION	ST	9/30/85 ONBOARD	9/30/86 EST EMPL
WESTINGHOUSE ELECTRIC CORP.	NAVAL REACTOR FAC	IDAHO FALLS	ID	1,023	1023
FIELD OFFICE TOTAL				3,430	3,430
RICHLAND OPERATIONS OFFICE					
BATTELLE	PACIFIC NORTHWEST LAB	RICHLAND	WA	2,479	2167
BCS RICHLAND, INC.		RICHLAND	WA	411	398
HANFORD ENVIRO HEALTH FDN		RICHLAND	WA	108	117
J. A. JONES CONST		RICHLAND	WA	919	568
KAISER ENGINEERING HANFORD		RICHLAND	WA	430	377
ROCKWELL HANFORD		RICHLAND	WA	5,270	5406
UNC NUCLEAR INDUS		RICHLAND	WA	2,131	2205
WESTINGHOUSE HANFORD	HANFORD ENGRG DEV LAB	RICHLAND	WA	1,821	1500
FIELD OFFICE TOTAL				13,569	12,740
SAN FRANCISCO OPERATIONS OFFICE					
ROCKWELL INTERNATIONAL	ENERGY TECH ENGRG CTR	CANOGA PARK	CA	224	210
STANFORD UNIV	LINEAR ACCELERATOR CTR	STANFORD	CA	1,270	1258
UNIV OF CALIFORNIA	LAW BERKELEY NATL LAB	BERKELEY	CA	2,984	2728
UNIV OF CALIFORNIA	LAW LIVERMORE NATL LAB	LIVERMORE	CA	8,514	8000
FIELD OFFICE TOTAL				12,992	12,196
SAVANNAH RIVER OPERATIONS OFFICE					
E. I. DUPONT DE NEMOUR	SAVANNAH RIVER CONST	AIKEN	SC	1,811	1811
E. I. DUPONT DE NEMOUR	SAVANNAH RIVER PLANT	AIKEN	SC	7,679	7817
UNIV OF GEORGIA	SAVANNAH RIVER ECO LAB	AIKEN	SC	127	127
WACKENHUT SYS INC	SECURITY GUARD SERV	AIKEN	SC	799	882
FIELD OFFICE TOTAL				10,416	10,637
SCHENECTADY NAVAL REACTORS OFFICE					
GENERAL ELECTRIC CO.	KNOLLS ATOMIC PWR LAB	SCHENECTADY	NY	3,022	3022
GENERAL ELECTRIC CO.	KNOLLS ATOMIC PWR LAB	WINDSOR	CT	167	167
FIELD OFFICE TOTAL				3,189	3,189

DEPARTMENT OF ENERGY
CONTRACTOR EMPLOYMENT

DOE OFFICE CONTRACTOR	OPERATION	LOCATION	ST	9/30/85 ONBOARD	9/30/86 EST EMPL
BARTLESVILLE PROJECT OFFICE					
NIPER	BPO	BARTLESVILLE	OK	247	241
FIELD OFFICE TOTAL				247	241
MORGANTOWN ENERGY TECH CENTER					
EG&G	METC	MORGANTOWN	WV	301	259
FIELD OFFICE TOTAL				301	259
PITTSBURGH ENERGY TECH CENTER					
BURNS & ROE	PETC	PITTSBURGH	PA	136	128
FIELD OFFICE TOTAL				136	128
DOE TOTAL				131,212	127,360

SEVERANCE PAY

Mr. BEVILL. Are any funds requested for severance pay?

Ms. Hesse. The FY 1987 Budget for Departmental Administration does not contain any monies for severance pay.

SUPPORT SERVICES

Mr. BEVILL. Provide a table showing support services costs for Fiscal Year 1985, Fiscal Year 1986 and Fiscal Year 1987 planned.

Ms. HESSE. The estimate for support services for Departmental Administration are shown in the following table I would like to insert for the record.

[The information follows:]

DEPARTMENTAL ADMINISTRATION

[Dollars in thousands and fiscal years]

	1985 obligations	1986 estimated obligations	1987 estimated
Transportation of things	$1,579	$1,400	$1,465
Standard level user charges	16,799	16,931	23,394
Rental payments to others	27,207	28,707	29,855
Printing and reproduction	5,953	5,306	5,518
Other services	169,088	211,117	181,051
Supplies and materials	8,800	8,000	8,320
Equipment	7,770	14,079	7,913
Total	237,196	285,540	[1] 257,516

[1] Includes $6 million to be financed by the use of prior year deobligated funds.

OVERTIME

Mr. BEVILL. How much will be spent in FY 1986 and FY 1987 for overtime?

Ms. HESSE. In FY 1986 the Departmental Administration account is expected to obligate $1.0 million on FY 1986 and $0.9 million in FY 1987 for overtime.

OVERTIME COSTS

Mr. BEVILL. What is being done to minimize overtime costs?

Ms. HESSE. Overtime is sometimes the most efficient and economical means of accomplishing urgent work with the minimum necessary staffing. Overtime in the Department is used only when it is the most practical means of accomplishing work which cannot be deferred; for example, for emergency repairs or maintenance in power transmission facilities; emergency staffing of continuous operations, such as power dispatching, round-the-clock drilling in oil fields, and uninterrupted transport of nuclear materials; and to meet certain peak cyclical workloads, for example, in the budget and procurement cycles. It is our policy that overtime must be ordered and approved in advance except where emergencies make advance approval impossible.

TRAINING

Mr. BEVILL. How much is requested for training in FY 1986? How much is planned for FY 1987?

Ms. HESSE. For FY 1986, the Department of Energy has requested $1,368,000 for centrally-sponsored training programs that have Departmentwide application. These include executive, management, supervisory and technical training programs. The Department is planning to spend approximately $1,250,000 on these same activities in FY 1987.

TRAVEL

Mr. BEVILL. How much was spent on travel in fiscal year 1985, planned in fiscal year 1986 and fiscal year 1987?

Ms. HESSE. The amount spent on travel in Departmental Administration in fiscal year 1985 was $4.5 million. The fiscal year 1986 travel projections of $5.0 million are based upon average actual obligations per employee adjusted by the OMB approved inflation factor. The fiscal year 1987 budget of $6.0 million has also been adjusted for inflation. In addition, it reflects increased travel associated with enhanced programmatic requirements such as audits, inspections, and investigations conducted by the Inspector General, and increased litigation requiring travel for General Counsel personnel.

CONSULTANTS

Mr. Bevill. Provide for the record a list of all consultants utilized by the Department in FY 1985, FY 1986.

Ms. Hesse. Consultants used by the Department in FY 1985 and FY 1986 are shown on a list which I would like to insert in the record.

[The information follows:]

Fiscal year 1985

Gary Knight, Erich Evered, J. Michael Farrell, John Paisley, Patrick Collins, Robert Gardner, Freydoun Afshar, Jack Lichtenstein, Robert Hahn, Elliott Roberts, Wayne Rives, Joseph Leary, William Funk, John Roberts, Harry Brown, Howard Ross, Sydney Chiswell, George Holling, Joel Stronberg, George Stapleton, James Kane, Gerald Tape, Daniel Miller, Thomas Kuehn, Donald Todd, Betsy Warren, Bill Cook, Franklin Scott, Dixy Lee Ray, Richard Hamburger, John Hartsock, Robert Niles, Jack Rosengren, Robert Monroe, Murray Nash, Eric Rojo, Edward Badolato, William Lenneman, Anthony Bopp, Edward Binkowski, Tore Dalenius, Robert Eberle, Carl Harris, Frederick Murphy, Benjamin Lev, Melvin Steinhart, Peter Ballaschi, Ray Gibson.

Fiscal year 1986

Sylvester Foley, William Vaughn, Elliott Roberts, Francis Duncan, Charles Schwartz, Severino Koh, George Stapleton, Gerald Tape, Israel Warshaw, James Leiss, James Prather, Edward Badolato, Franklin Scott, Michael Seaton, Dixy Lee Ray, Richard Hamburger, Robert Monroe, Gary Knight, Thomas Etzold, Eric Rojo, Melvin Steinhart, Bernard Asner, Edward Binkowski, Tore Dalenius, Reginald Sanders, Larry Ellsworth, Ray Gibson, Jerry Griffith, Howard Ross.

Mr. Bevill. How much is estimated to be spent in FY 1987?

Ms. Hesse. It is estimated that $122,000 will be spent in FY 1987.

Mr. Bevill. Define what you mean by consultant.

Ms. Hesse. By consultant, I mean a person who serves as an adviser who provides views or opinions on problems or questions presented by the Department. A consultant has a high degree of broad administrative, professional, or technical knowledge or experience which makes his/her advice distinctively valuable to the Department.

Mr. Bevill. How does the Department manage the use of Consultants?

Ms. Hesse. Consultants are appointed temporarily for one year or less, on a full-time or intermittent basis, depending upon need. The Head of the immediate employing organization is responsible for initiating the request for services, certifying as to the proposed utilization of the individual, and conducting a quarterly review and recertification that the original reasons for appointing the consultant still exist and that the individual is still being utilized in the manner originally proposed. My staff reviews these requests, verifies that the proposed appointment complies with the governing regulations and reviews the quarterly recertifications to assure that the appointments are still appropriate.

ADVISORY COMMITTEES

Mr. Bevill. Provide a list of advisory committees, a description of each, a list of reports or other advice given to the Department and the amount budgeted for each in FY 1986 and FY 1987.

Ms. Hesse. The Department has eleven chartered advisory committees. A description of each committee, a list of their FY 85 reports or other advice received by the Department, and the amount budgeted for each in FY 86 and FY 87, are shown in tables that I would like to insert in the record.

[The information follows:]

DESCRIPTION OF DOE ADVISORY COMMITTEES

1. AMERICAN STATISTICAL ASSOCIATION COMMITTEE ON ENERGY STATISTICS

Objectives: To provide recommendations based on reviews of elements of Energy Information Administration (EIA) information collection and analysis programs; advice on priorities of technical and methodological issues in the planning, operation, and review of EIA statistical programs; and advice on matters concerning improved energy modeling and forecasting tools, particularly regarding their functioning, relevancy and results.

2. DOE/NSF NUCLEAR SCIENCE ADVISORY COMMITTEE

Objectives: To provide advice to both the Department of Energy and the National Science Foundation on scientific priorities within the field of basic nuclear science research. Basic nuclear research is understood to encompass experimental and theoretical investigations of the fundamental interactions, properties, and structures of atomic nuclei.

3. DOSE ASSESSMENT ADVISORY GROUP

Objectives: To provide the Secretary of Energy and the Manager, Nevada Operations Office (NV), with advice and recommendations pertaining to the Off-site Radiation Exposure Review project. This project concerns the evaluation and assessment of the amount of radiation received by members of the nuclear test operations conducted at the Nevada Test Site. The function and role of this Advisory Group is threefold. First, as a multi-disciplinary group of experts, the Group is expected to provide effective and objective working-level advice and recommendations to the Manager, NV, in the planning, organization, and technical direction of the project. Secondly, the Group will review the activities of the project. Thirdly, the Group will forward copies of all reports on the progress of the project including the identification of problem areas, if any, to both the Secretary of Energy and to the Manager, NV. The Manager, NV, will maintain management and administrative supervision of the project. The group will act in an advisory and review capacity to the project. The Secretary will receive and review reports of the group and, where appropriate, resolve problems which might arise.

4. ENERGY RESEARCH ADVISORY BOARD

Objectives: To advise the Secretary, the Deputy Secretary, the Under Secretary of Energy, the Director of Energy Research and the Assistant Secretary Policy, Safety, and Environment, on overall research and development conducted in DOE and to provide long-range guidance in these areas to the Department.

5. HEALTH AND ENVIRONMENTAL RESEARCH ADVISORY COMMITTEE

Objectives: To conduct periodic reviews of elements of the Health and Environmental Research Program and provide advice on long-range plans, priorities, and strategies to address more effectively the scientific aspects of energy-related health and environmental issues of departmental policies and programs. To provide advice on appropriate levels of funding to develop those plans, priorities, and strategies and to help maintain appropriate balance between competing elements of the program.

6. HIGH ENERGY PHYSICS ADVISORY PANEL

Objectives: To consider and provide advice and guidance on a continuing basis to the Secretary, through the Director of Energy Research, on the national high energy physics research program, including: (a) periodic reviews of the program and recommendation of any changes considered desirable on the basis of scientific and technological advances or other factors; (b) advice on long-range plans, priorities, and strategies for the national high energy physics program; (c) advice on recommended appropriate levels of funding to assure a world leadership position, and to help maintain appropriate balance between competing elements of the program; and (d) advice and guidance on any issues relating to the program as requested by the Secretary or the Director of Energy Research.

7. MAGNETIC FUSION ADVISORY COMMITTEE

Objectives: To provide advice and recommendations on a continuing basis to the Secretary, through the Director of Energy research, including: (a) periodic reviews of elements of the program and recommendation of any changes considered desirable on the basis of scientific and technological advances or other factors; (b) advice on long-range plans, priorities, and strategies to demonstrate the scientific and engineering feasibility of fusion; (c) advice on recommended appropriate levels of funding to develop those strategies and to help maintain appropriate balance between competing elements of the program; (d) advice and guidance on any issues relating to the program as requested by the Secretary or the Director of Energy Research.

8. NATIONAL COAL COUNCIL

Objectives: To provide advice and recommendations to the Secretary of Energy on a continuing basis on overall policy matters relating to coal.

9. NATIONAL ENERGY EXTENSION SERVICE ADVISORY BOARD (established by Public Law 95-39)

Objectives: To carry on a continuing review of the comprehensive Energy Extension Service program and approved plans of the Governors of each state for implementing Energy Extension Service activities. The purpose of this review is to advise the Director of Energy Extension Service, the Secretary of Energy, and the Congress on the effectiveness of this program and the plans in achieving the objectives of the National Energy Extension Service Act (Public law 95-39, Title V), and to determine how their operation might be improved in furtherance of such objectives.

10. NATIONAL PETROLEUM COUNCIL

Objectives: To provide advice, information, and recommendations to the Secretary of Energy on matters relating to oil and gas or the oil and gas industries.

11. TECHNICAL PANEL ON MAGNETIC FUSION OF THE ENERGY RESEARCH ADVISORY BOARD (Established by Public Law 96-386)

Objectives: The Panel shall perform a review of the conduct of the national magnetic fusion energy program and make recommendations on the following items, among others; (a) the preparation of the 5-year program plan required by Section 5 of the Act; (b) the type of future facilities needed to meet the goals of the Act along with their projected completion dates; (c) the adequacy of participation by universities and industry in the program; (d) the adequacy of international cooperation in magnetic fusion and any problems associated therewith; and (e) institutional, environmental, and economic factors limiting, or prospectively limiting, efforts to achieve commercial application of magnetic fusion energy systems.

DOE ADVISORY COMMITTEE REPORTS - FY 85

1. AMERICAN STATISTICAL ASSOCIATION COMMITTEE ON ENERGY STATISTICS

   Report of ASA Meeting of October 1984, dated 2/1/85
   Report of ASA Meeting of April 1985, dated 8/1/85

2. DOE/NSF NUCLEAR SCIENCE ADVISORY COMMITTEE

   Review of the 1983 Long Range Plan for Nuclear Science, dated November 1984
   A Computational Plan for Nuclear Science, dated February 1985
   Report of the Solar Neutrino Subcommittee, dated August 1985

3. DOSE ASSESSMENT ADVISORY GROUP

   Report of DAAG Meeting of February 21-22, 1985

4. ENERGY RESEARCH ADVISORY BOARD

   Research Needs: Energy and Agriculture, dated October 1984
   Light Water Reactor Research and Development, dated May 1985
   Clean Coal Use Technologies, dated June 1985
   Review of the National Research Council Report, Major Facilities for Materials Research and Related Disciplines, dated June 1985

5. HEALTH AND ENVIRONMENTAL RESEARCH ADVISORY COMMITTEE

   Review of the Office of Health & Environmental Research Program on Risk Analysis, dated September 1985

6. HIGH ENERGY PHYSICS ADVISORY PANEL

   Report of the HEPAP Subpanel on Computer Needs for the Next Decade dated August 1985
   Report of the HEPAP Study of the U.S. High Energy Physics Program 1985--1995, dated September 1985

7. MAGNETIC FUSION ADVISORY COMMITTEE

   MFAC Report on Draft DOE Magnetic Fusion Policy Plan, dated October 1984
   MFAC Report on High Power Density Fusion Systems, dated May 9, 1985

8. NATIONAL COAL COUNCIL

   0

9. NATIONAL ENERGY EXTENSION SERVICE ADVISORY BOARD (established by P.L.95-39)

   Sixth Annual Report to Congress and the Secretary of Energy on the Nationwide Energy Extension Service Program, dated June 1985

10. NATIONAL PETROLEUM COUNCIL

    The Strategic Petroleum Reserve—A Report on the Capability to Distribute SPR Oil, dated December 1984

11. TECHNICAL PANEL ON MAGNETIC FUSION OF THE ENERGY RESEARCH ADVISORY BOARD (established by Public Law 96-386)

    (The Panel only meets every third year)

BUDGET INFORMATION FOR DOE ADVISORY COMMITTEES

		FY 1986	FY 1987
1.	AMERICAN STATISTICAL ASSOCIATION COMMITTEE ON ENERGY STATISTICS	$ 45,900	$ 50,490
2.	DOE/NSF NUCLEAR SCIENCE ADVISORY COMMITTEE	67,000	73,700
3.	DOSE ASSESSMENT ADVISORY GROUP	133,500	0
4.	ENERGY RESEARCH ADVISORY BOARD	263,500	289,850
5.	HEALTH AND ENVIRONMENTAL RESEARCH ADVISORY COMMITTEE	84,200	92,620
6.	HIGH ENERGY PHYSICS ADVISORY PANEL	69,700	76,670
7.	MAGNETIC FUSION ADVISORY COMMITTEE	17,350	19,085
8.	NATIONAL COAL COUNCIL	76,097	83,706
9.	NATIONAL ENERGY EXTENSION SERVICE ADIVSORY BOARD (Pub.L. 95-39)	60,000	66,000
10.	NATIONAL PETROLEUM COUNCIL	68,530	75,383
11.	TECHNICAL PANEL ON MAGNETIC FUSION OF THE ENERGY RESEARCH ADVISORY BOARD (Pub.L. 96-386)	24,000	26,400

COMPARABILITY ADJUSTMENTS

Mr. **Bevill**. Please provide a table showing the comparability adjustments between the FY 1986 and FY 1987 budgets. Please explain these adjustments.

Ms **Hesse**. The comparability adjustments between FY 1986 and FY 1987 budgets are shown in the following table I would like to insert for the record.

[The information follows:]

Departmental Administration

[Dollars in Thousands]

Fiscal year 1986 Appropriation	$166,138
Less Gramm-Rudman-Hollings	−16,106
Revised FY 1986	150,032
Fiscal year 1987 Comparability Transfer from Environment, Safety and Health to Policy Analysis and Systems Studies as a result of final staffing allocations.	+287
Fiscal year 1986 Comparable to FY 1987	150,319

OFFICE OF THE SECRETARY

Mr. **Bevill**. Within the Office of the Secretary, please provide the on-board staffing by function.

Ms. **Hesse**. The on-board staffing for the Office of the Secretary is shown in a table which I would like to insert in the record.

[The information follows:]

Office of the Secretary	16
Office of the Deputy Secretary	4
Office of the Under Secretary	11
Total	31

Mr. **Bevill**. Please provide a listing of the staffing proposed for FY 1987 by function.

Ms. **Hesse**. Staffing for FY 1987 for the Office of the Secretary will be the same as the FY 1986 level, a total of 31 positions.

Mr. **Bevill**. Provide a listing of the use of official reception and representation funds for FY 1985, FY 1986 and FY 1987.

Ms. **Hesse**. Official reception and representation expenditures for FY 1985 and FY 1986 to date are shown on a list which I would like to insert in the record. Although exact expenditures have not been determined for the remainder of FY 1986 and FY 1987, it is anticipated that they will be similar in nature to those on the following list.

[The information follows:]

OFFICIAL REPRESENTATION ACCOUNT
FY 1985

SUBJECT	AMOUNT
Official expenses incurred for officials of the National Conservation Award.	$5,206.55
Official expenses incurred by Secretary for British Government Officials in London, England.	816.24
Official dinner for French visitors involved in bilateral defense-related discussions.	275.00
Official expenses incurred for Assistant Chief Scientific Adviser, Ministry of Defense, United Kingdom.	220.00
Official expenses for use in the Office of the Secretary	46.44
Official expenses incurred by Secretary for month of November.	53.72
Official expenses incurred for officials of the E.O. Lawrence Awards.	499.68
Official expenses for use in the Office of the Secretary.	16.34
Official expenses for use in the Office of the Secretary.	46.44
Official expenses incurred by Secretary for month of December.	94.30
Official expenses incurred for reception honoring officials of the FERMI Award.	748.00
Reception hosted by SEcretary for the Mexican Minister of Energy.	2,463.29
Official expenses incurred by Secretary for month of January.	70.32
Official expenses incurred by Secretary for month of February and March.	87.93
Official expenses incurred for Federal Task Force on Disabled Persons.	36.26
Official expenses incurred for Federal Women's Program.	344.75
Official expenses for use in the Office of the Secretary.	36.26
Official award ceremony for Conservation and Renewable Energy Officials.	83.20

SUBJECT	AMOUNT
Memorabilia items for official purposes.	$ 547.32
Official expenses by Secretary for month of April.	125.72
Official expenses for use in the Office of the Secretary.	15.84
Official expenses incurred by the Secretary for foreign dignataries.	134.94
Official expenses incurred by the Secretary for foreign dignataries.	369.00
Official expenses incurred by Secretary for month of May.	244.10
Memorabilia items incurred by the Secretary for Senior Government Officials.	254.80
Official expenses incurred for Swearing-In Ceremony.	189.96
Official expenses incurred for reception held by the Office of the Secretary.	24.86
Official expenses incurred by Secretary for month of June.	78.26
Official expenses incurred for the National Coal Council.	2,487.50
Official expenses incurred by Secretary for month of July.	169.58
Official expenses incurred by Secretary for month of August.	53.45
Memorabilia items for official purposes.	600.00
Memorabilia items for official purposes.	469.13
Memorabilia items for official purposes.	189.71
Official expenses for use in the Office of the Secretary.	96.26
Official expenses incurred by Secretary for month of September.	26.59
Memorabilia items for official purposes.	1,730.00
Memorabilia items for official purposes.	7,060.00
Official expenses incurred by Secretary for month of October.	13.84
Memorabilia items for official purposes.	7.25
Memorabilia items for official purposes.	736.92
Memorabilia items for official purposes.	245.00
Memorabilia items for official purposes.	600.00
Memorabilia items for official purposes.	2,878.50

SUBJECT	AMOUNT
Memorabilia items for official purposes.	$ 233.08
Memorabilia items for official purposes.	515.24
TOTAL EXPENDITURES:	$31,251.57

OFFICIAL REPRESENTATION ACCOUNT
FY 1986

SUBJECT	AMOUNT
Official dinner for members of the Bilateral Exchange Working Group Meeting.	$ 200.00
Official expenses for use in the Office of the Secretary.	46.26
Official expenses incurred by Secretary for month of November.	23.03
Official expenses incurred for officials of the E.O. Lawrence Awards.	674.83
Official expenses incurred by Secretary for month of December.	20.50
Official expenses incurred by Secretary for reception.	281.41
Memorabilia items for official purposes.	20.14
Official expenses incurred by Secretary for reception.	80.00
Official expenses incurred by the Secretary.	218.74
Official expenses incurred by Secretary for month of January.	250.00
Official expenses incurred by Secretary for reception.	71.18
Official expenses incurred for Swearing-In Ceremony.	66.76
Official expenses incurred for the Secretary's Award Ceremony.	101.25
Official expenses incurred for reception honoring officials of the FERMI Award.	751.83
Official expenses incurred by Secretary for reception.	41.19
Official expenses incurred by Secretary for month of February.	250.00
Official expenses incurred for Swearing-In Reception.	49.75
Official expenses incurred for dinner honoring officials of the FERMI Award.	308.00
Official expenses incurred for Swearing-In Reception.	50.00
Memorabilia items for official purposes.	150.00
Official expenses for use in the Office of the Secretary.	48.13
Official expenses incurred for Secretary's trip to China, Japan and Korea.	379.00
Official expenses incurred by Secretary for month of March.	250.00
TOTAL EXPENDITURES TO DATE:	$4,332.00

Mr. Bevill. Please describe the impact of a $10,000 reduction to the FY 1987 official reception and representation funds.

Ms. Hesse. The Department of Energy is currently budgeting $35,000 for the official reception and representation fund. A $10,000 reduction would reduce this to $25,000, or 29%.

The Secretary meets with and receives numerous international, State and local officials and executives of industrial, commercial and business organizations. Frequently, the Department must host receptions and meetings with officials and representatives from these sectors or reciprocate for follow-on meetings. In addition, numerous situations arise where protocol prescribes giving relatively inexpensive gifts. Also, there are periodic internal receptions related to major award ceremonies, departmental officials and employees. Since the current fund is relatively small, a reduction of 29% would severely impact these representation activities.

Mr. Bevill. Please justify a 16% increase in the funding for the Office of the Secretary.

Ms. Hesse. The Office of the Secretary has an FY 1987 request of $1.9 million. This amount exceeds the FY 1986 appropriations, as adjusted for Gramm-Rudman-Hollings, by $257,000. However, this Office had an FY 1985 unobligated balance of $499,000 which is not reflected in the budget appendix and has been reallocated in FY 1986, making total FY 1986 obligational authority $2.1 million. The projected requirement for FY 1986 to support existing staffing levels is a total of $2.2 million. This additional requirement will be met through a reprogramming. The FY 1987 funding level, though lower than FY 1986 by $390,000, will continue support of these FTEs but will have reduced funding for travel and other compensation. Total funding for the Office of the Secretary is relatively inelastic to small changes in total Departmental funding and therefore any further reductions in FY 1987 would impair our ability to ensure effective oversight and management of DOE programs.

Mr. Bevill. Please provide the funding for travel for FY 1985, FY 1986 and FY 1987.

Ms. Hesse. The travel funding for the Office of the Secretary for FY 1985, FY 1986 and FY 1987 is shown in a table I would like to insert in the record.

[The information follows:]

Fiscal year:	
1985	$174,000
1986	193,000
1987	220,000

Mr. Bevill. Justify the FY 1987 increase.

Ms. Hesse. The total obligation authority for Office of the Secretary travel for FY 1986 is $305,000. This reflects reallotment of FY 1985 unobligated balances of $112,000. The FY 1987 request of $220,000 is therefore a decrease from FY 1986 planned obligations of $305,000.

GENERAL COUNSEL

Mr. Bevill. Describe the work load measurements used to determine the legal requirements for the General Counsel.

Mr. Farrell. The Manpower Utilization Reporting System (MURS) is the General Counsel Office's principal tool for work load measurement. MURS tracks the number of cases litigated and the statutes enforced by the number of personnel in each of the twelve Assistant General Counsel Offices. This data is used to help identify work load trends and staffing requirements for completing the General Counsel's mission.

The data provides a rough productivity measure. MURS is not capable of differentiating "large cases" among "smaller cases" or "major statutes" among "lesser statutes" in work load impact. The fact that the number of statutes to be enforced increases does not necessarily mean that there is a need for a comparable increase in staffing. For instance, some of the new budget acts have only a minor impact on overall work load of the General Counsel.

The General Counsel Office also utilizes Energy Manpower Personnel Resources Information System (EMPRIS) data that measures actual staff hours involving the Nuclear Waste Policy Act. This information assists us in projecting work load trends and staffing requirements for activities supported by the Nuclear Waste Fund.

Mr. Bevill. How much contracting funds are available to the Office of the General Counsel in FY 1985, FY 1986 and FY 1987? Please explain their use.

Mr. Farrell. The amount of contracting funds available to the General Counsel are: FY 1985 ($1,402,000); FY 1986 ($1,107,000); and FY 1987 ($1,198,000). Virtually all of the target levels for contracting funds represent fixed costs, such as maintenance of a law library and essential contracting for domestic and international patent services. Also included are the cost of legal transcript services, publication of legal documents and funding for the General Counsel's training activities.

BUDGET REQUEST

Mr. Bevill. Please provide the Inspector General's budget request to the Department and to the OMB for FY 1987.

Mr. Layton. The Inspector General's budget request to the Department for Fiscal Year 1987 was $62,557,000. The request to OMB was $21,092,000.

REPROGRAMMING OF FUNDS

Mr. Bevill. Please provide a listing of any reprogrammings of funds appropriated to the Inspector General in FY 1985 or FY 1986.

Mr. Layton. In Fiscal Year 1985, $10,000 was reprogrammed from full-time permanent salaries to other personnel compensation. In addition, $326,000 was reprogrammed from contractual services to the following areas: $114,000 to full-time permanent salaries; $9,000 to other personnel compensation; $112,000 to personnel benefits; and, $91,000 to travel. There has been no reprogramming of funds thus far in Fiscal Year 1986.

RESOURCES DEVOTED TO FINANCIAL AUDITS IN FISCAL YEAR 1985

Mr. Bevill. Please provide a table showing the resources of the Inspector General devoted to financial audits in FY 1985, FY 1986 and FY 1987.

Mr. Layton. Auditors are not assigned by audit type, such as financial and compliance, economy and efficiency, or program results. A strict breakdown by these audit types also would extremely difficult because many audits contain elements of more than one of the above categories. However, approximately 55 percent of our Fiscal Year 1986 audit effort is devoted to financial and compliance audits, including contract and grant audits and reviews of compliance with the Federal Managers' Financial Integrity Act. The balance of our audit effort is focused on economy and efficiency and program results audits. This mix represents a moderate increase in emphasis on financial audits as compared to Fiscal Year 1985 when approximately 50 percent of our audit resources were directed to financial and compliance audits. Although the Fiscal Year audit plan has not been finalized, we anticipate that the 1987 distribution will approximate the 1986 distribution.

Mr. Bevill. Please show Federal employees' salaries and contractor employees and salaries.

Mr. Layton. The cost of a staff-year of Inspector General effort is about $55,000. A staff-year of contracted audit effort is approximately $85,000.

AUDITOR ASSIGNMENT ACCORDING TO TYPE OF AUDIT

Mr. Bevill. Within the Federal manpower assigned to the IG, how many auditors in FY 1985, FY 1986 and FY 1987 are assigned to Financial Audit; to Economy and Efficiency Audits and Program Results Audits?

Mr. Layton. As previously stated, we do not assign personnel by type of audit. The distribution of the Inspector General audit effort approximates the breakdown provided in the answer to the previous question.

JUSTIFICATION OF AUDITOR DISTRIBUTION

Mr. Bevill. Provide the justification for this distribution in terms of requirements and expected results.

Mr. Layton. On an annual basis my office performs an intensive planning activity to identify our audit workload, resources and scheduling. This process is initiated with a Department of Energy audit needs and resource assessment which is followed by intensive audit planning for the following fiscal year. The end product of this activity is an annual audit workplan which identifies the audits to be made in each respective year. The audits conducted in Fiscal Year 1985 and Fiscal Year 1986 were selected based on this process which utilized the following priority criteria: statutory and legal requirements; dollars expended and trends; prior audit history and results; sensitivity; vulnerability to fraud, waste and abuse; and programmatic requirements. The selection of individual audits is based on audit judgment and the consideration of the effective use of our available resources. The distribution of manpower between selected audit types and/or categories is a natural result of the requirements analysis and planning process. We have not completed our workplan for Fiscal Year 1987 although the audit needs and resource study is in process.

BREAKDOWN OF CONTRACTOR EFFORT AND JUSTIFICATION

Mr. **Bevill**. Within the Contracted Auditors, how many in FY 1985, FY 1986 and FY 1987 are assigned to Financial Audits, Economy and Efficiency Audits and Program Results Audits?

Mr. **Layton**. As previously stated, auditors are not assigned by audit type and many audits contain elements of more than one type.

Mr. **Bevill**. Provide the justification for this distribution in terms of requirements and expected results.

Mr. **Layton**. The distribution of contract audit resources is the result of essentially two factors. The annual audit planning process identifies the mix of audits to be completed. The allocation of resources between OIG auditors and contractors is based on obtaining the maximum utilization of skills.

The use of contract auditors has had satisfactory results. Some problems were encountered initially in using contract auditors to do non-financial audits because financial auditing is the area in which these firms have the most experience. However, over time, these firms have gained the experience necessary to successfully conduct economy and efficiency and program results audits.

STAFFING

Mr. **Bevill**. Please provide the staffing in FY 1985, FY 1986 and FY 1987 for Audits, Inspections and Investigations.

Mr. **Layton**. The Full-Time Equivalents for Audits, Inspections and Investigations for Fiscal Years 1985, 1986 and 1987 are shown in a table I would like to insert in the record.

INSPECTOR GENERAL FULL-TIME EQUIVALENTS

	Fiscal year—		
	1985	1986	1987
Audits	99	99	99
Inspections	19	19	19
Investigations	36	35	35
Front Office/Executive Director	25	25	25
Total	179	178	178

GOCO RESULTS

Mr. **Bevill**. Which of the Department's GOCO facilities received a financial audit conducted by the IG in FY 1985 and FY 1986? What were the results?

Mr. **Layton**. We completed 24 GOCO audits in FY 1985 and three in FY 1986. Additionally, we have 27 other GOCO audits currently in process. A detailed listing of all three groups is provided for the record.

Each GOCO audit results in three audit opinions by the auditor—an opinion on the financial statements, internal controls and compliance with the material aspects of the contract between DOE and the GOCO.

Samples of audit findings noted in the above FY 1985/1986 reports are: unfavorable nuclear material inventory differences persisted and required continued management attention; pension plan accounts were over funded by $5.5 million at one GOCO; unfunded pension liability balances were being estimated at year end instead of the GOCO's obtaining more accurate estimates from an actuary; internal controls needed strengthening in areas of labor cost accounting improperly recorded and should be reduced; and no comprehensive disaster recovery plan existed for the central computer complex.

[The information follows:]

GOCO audits

Completed in fiscal year 1985 (24)

FERMI National Accelerator (82-83)
Argonne National Lab (82-83)
Rust Engineering Co. (83)
EG&G—Idaho (83)
Exxon Nuclear—Idaho (83)
ZIA Company (83)
Lawrence-Allison & Associates West (83)
Mason & Hanger (84)
BCS—Richland (83-84)
Stanford Linear Accelerator Center (83-84)
EG&G—Nevada (84)
Reynolds Electric & Engineering Co. (84)
Holmes Narver, Inc. (84)
Rockwell International—ESG (83-84)
Westinghouse—Idaho Falls (Exxon Nuclear) (84)
West Valley Nuclear Services, Inc. (83-84)
Morrison Knudson Co., Inc. (83-84)
Catalytic, Inc. (83-84)
Kaiser Engineering—Hanford (83-84)
Hanford Environmental Health (83-84)
Goodyear Atomic Corp. (83)
Rockwell—Hanford (83)
UNC Nuclear (83)
Los Alamos National Lab (83)

Completed in fiscal year 1986 (3)

Martin Marietta—FY 1985—Oak Ridge Plant
Martin Marietta—FY 1985—Paducah Plant
Monsanto Research Corp., Mound—FY 1984

Audits in process and targeted for completion in fiscal year 1986

General Electric-Knolls (84)
Westinghouse-Bettis (84)
Union Carbide (Martin Marietta) (85)
NLO, Inc. (84)
Battelle-PNL (83-84)
J.A. Jones Construction Co. (83-84)
Sandia National Labs (84)
Bendix Corp-Kansas City (84)
Argonne National Lab (84-85)
Westinghouse-Hanford (83)
Rockwell International-Rocky Flats (84-85)
Lawrence-Allison & Assoc. West (84-85)
EG&G-Idaho (84-85)
E.I. duPont-Savannah River (83)
Goodyear Atomic (84-85)
FERMI (84-85)
Brookhaven National Lab (84-85)
Westinghouse-Hanford (84-85)
Rockwell-Hanford (84-85)
UNC Nuclear (84-85)
Los Alamos-University of California (84-85)
Lab of Biomedical & Envir. Sciences (84-85)
Ames Lab (84-85)
Oak Ridge Assoc. Universities (84)
Stone & Webster Eng. Co. (84-85)
Rust Engineering Co. (84-85)
Bendix Grand Junction (84-85)

MISUSE OF COMPUTERS

Mr. Bevill. What are the IG's capabilities with regard to auditing and investigation misuse of computers? Please describe any attempts to upgrade your capabilities in this area.

Mr. Layton. Our Department has nearly $1 billion invested in computer equipment that ranges in capacity from personal computers for single users to "supercomputers" for complex and high-speed scientific calculations. The DOE budget for computer resources and operations is over $600 million in FY 1986.

Where allegations of misuse have been received, my staff has identified the person or persons responsible, the nature of information wrongfully entered and processed and/or wrongfully accessed and made recommendations to DOE management for corrective action. Our computer cases have involved personal unofficial use of computers.

We have placed increasing emphasis on auditing the usage of the Department's computer resources. Working with the Computer Committee of the President's Council on Integrity and Efficiency, we are training our audit staff in computer skills, with special emphasis in reviewing security of ADP systems. As a result of audit work related to computer usage and security we accomplished the following: identified and corrected computer misuses by surveying over 60 DOE sites that extensively use ADP resources; performed successful audits in the areas of screening of contractor personnel and Federal employees having access to DOE's computer systems; improved computerized internal controls of payment systems by testing transactions through the computer; and determined that the Departmentwide computer risk analysis effort was adequately planned and was being effectively used for protecting computer assets.

Our plans to expand audits in computer resource utilizations include: cyclic reviews of computer centers throughout the Department to determine efficient and cost-effective use of our vast computer resources; reviews of high cost areas such as the acquisition and usage of "supercomputers" and developed software; expanded reviews of computer security within our Department; and, internal to the Office of Inspector General, increased emphasis on specialized computer training for the audit staff.

RECURRING SAVINGS

Mr. Bevill. For each of the seven "recurring savings" audits listed in your budget showing $22,986,900 in annual savings, provide the financial information before the audit and after the audit that verifies these annual savings.

Mr. Layton. The seven audits are discussed below.

COLLECTION OF WINDFALL PROFIT TAX FOR CRUDE OIL SALES AT THE NAVAL PETROLEUM RESERVES IN CALIFORNIA (NPRC) ($500,000)

The audit disclosed that not all purchasers of NPRC crude oil paid the windfall profits tax at the same time they made payment to the Department for the oil itself, as required by the oil sales contracts and windfall profits tax regulations. We calculated that certain purchasers were able to delay tax payments of $42 million for periods ranging from 18 to 47 days after receipt of the oil and the tax payments were due. Our review covered the six-month period October 1983 through March 1984. We calculated that the delay in receipt of the tax proceeds cost the Government about $244,000 in lost interest income for this period. We concluded that on an annualized basis this would be about $500,000. Management concurred in the finding and recommendations and took prompt corrective action. Consequently, we believe the recurring savings calculations to be reasonable and realizable.

ASSESSMENT OF CHARGES UNDER THE HYDROPOWER LICENSING PROGRAM ($15.5 MILLION)

We found that the Federal Energy Regulatory Commission (FERC) was not billing Hydropower Program licensees for significant amounts of administrative charges as required by law. We also found the FERC was not using current land values and current interest rates in determining the land use charges which were to be billed to program licensees. In total, we concluded that the licensees should be providing the Federal Government an additional $21.2 million annually for the services received under the Hydropower Program.

With regard to the administrative costs, we consulted with the U.S. Forest Service, one of the primary agencies involved in providing administrative services for the Hydropower Program. Responsible Forest Service officials estimated that they spend about $6 million per year providing these services. This is the number which we used calculating our recurring savings. It is believed to be conservative, because we did not attempt to estimate the cost of administrative services provided by the

Bureau of Land Management, the Fish and Wildlife Service, and the National Marine Fisheries Service.

Regarding land use charges, we focused on the average land value basis and the current interest rates used by FERC. We found, for example, that FERC, as a minimum, should be using a $687 per acre land value rather than the $150 per acre it was using. We also found that the interest rate component of FERC's charging system was set at 7⅞ percent in 1983. We concluded that this was unreasonably low for the period in question and that a 13.93 percent rate would be more appropriate. In short, based on these new calculation bases, we found that FERC should be charging the licensees an additional $15.2 million per year. However, of this amount, only $9.5 million accrues to the Federal Government with the balance going to the states in which the land is located.

FERC agreed with these findings and has taken prompt, aggressive corrective action.

SEGREGATION OF TRANSURANIC WASTE AT DOE'S ROCKY FLATS PLANT ($4.6 MILLION)

The audit disclosed that the Department, at the Rocky Flats Plant, should segregate certain waste materials generated within the production process to avoid unnecessary volumes of transuranic waste—transuranic waste is substantially more expensive to dispose of than is low level radioactive waste. We recommended that the various waste streams at Rocky Flats be evaluated to identify points where segregation may result in volume reduction of transuranic waste. We estimated that the cost to dispose of the low level waste is about $740 per drum as compared to about $2,367 to $2,873 per drum for the transuranic waste. The Rocky Flats operating contractors estimated that in FY 1982, 35 percent of the waste shipped as transuranic was originally low-level waste. Based on this estimate, we concluded that if 35 percent of the drums (980) shipped in 1982 proved to be low-level waste and were disposed of as such, the cost difference or potential savings to the Department would be between $1.6 and $2.1 million per year. Subsequently, the Department provided information which indicated that the cost of disposing of the transuranic waste had been understated in our report. The revised estimate caused us to recalculate our savings estimate and to increase it to $4.6 million.

Management concurred in the finding and in the recommendation and agreed to take corrective action. Management also commented that it was going to apply the principles surfaced in the audit report to other locations in the Department where low-level and transuranic waste are generated.

BONNEVILLE POWER ADMINISTRATION'S PURCHASE AND USE OF FIXED-WING AIRCRAFT ($157,900)

An audit of Bonneville's use of fixed-wing aircraft services, including purchase of a replacement aircraft, was made to determine if a need for Government-owned aircraft services was justified and cost effective. The audit was conducted from September 1983 to February 1984. It was found that Bonneville's decision to purchase a replacement aircraft was made without an adequate demonstration of need and without preparing complete analyses of cost and viable alternatives. Much of the required cost analysis prescribed by OMB and DOE regulations was made; however, Bonneville's analysis was incomplete and showed that the purchase of a new aircraft was not cost-effective. By not selecting the more economical altenative for acquiring additional air service (charter or commercial sources) we determined that a minimum of $157,900 of annual aircraft costs would be incurred unnecessarily. The Bonneville Power Administration fixed-wing aircraft flight hour cost computation, based on Fiscal Year 1983 experience, is inserted for the record.

The report concluded that Bonneville had a legitimate need for some form of fixed-wing service for occasional trips to remote locations and for emergency repair service. However, Bonneville could not provide convincing evidence showing that two Government-owned fixed-wing aircrafts were needed or that the cost of purchasing and operating them was economically justified. The report recommended that Bonneville take action to ensure that a new requirements determination is made for fixed-wing aircraft each time a procurement action is contemplated and that the spirit and intent of OMB Circular A-76 is followed in developing reliable information to support future acquisitions of products and services customarily provided by commercial sources.

The Department concurred in the recommendations but did not concur with the report's major conclusion that two owned aircraft were not needed nor economically justified.

[The information follows:]

Bonneville Power Administration, fixed-wing aircraft flight hour cost computation, based on fiscal year 1983 experience

Cost element	*Total*
Operating Costs[1]	$411,223
General Expense-Fixed Wing[1]	94,542
Debt Service on Hangar	66,334
Amortization of Hangar	21,000
Debt Service on Aircraft	305,453
Depreciation	57,142
Subtotal	955,694
Less Average Annual Aircraft Residual Value	133,333
Total annual expenses	822,361
Hours flown in fiscal year 1983	[2] 814
Average Flight Cost Per Hour	$1,010
Less: Flight Cost Per Hour for Charter Services	816
Total	194
Times Flight Hours Flown in FY 1983	814
Excess Cost Incurred Per Year	157,916

[1] Operating and general expense costs were annualized based on 9 and 11 months experience for aircraft flown by Bonneville in Fiscal Year 1983.

[2] Hours flow was based on a 10-month experience projected for 12 months.

WESTERN AREA POWER ADMINISTRATION'S PURCHASE OF A JET FIXED-WING AIRCRAFT ($129,000 ANNUALLY)

An audit of the Western Area Power Administration's (Western) purchase of a fixed-wing aircraft was made to determine if the need for the aircraft was justified and cost effective. The audit was conducted from February 22 through May 30, 1984. The decision to purchase the aircraft was made without an adequate determination of need, required cost analysis prescribed by OMB and Department regulations, and demonstration that suitable commercial air service was not available. An analysis showed that a minimum of $129,000 of annual aircraft costs would be unnecessarily incurred by operating a Government-owned aircraft rather than chartering aircraft services.

Our analyses showed that it cost $478,000 to operate the Government-owned aircraft versus $349,000 per year to charter a similar aircraft or a savings of $129,000 annually. Western contended that the purchase of an aircraft was needed because: considerable nonproductive time was spent using limited indirect commercial air transportation to reach remote job sites; it allowed maximum flexibility in scheduling staff travel and reducing travel expenses; and, it would be used to rapidly dispatch crews and equipment to trouble spots for repairs or damage assessment, thereby shortening the duration of power outages. The audit did not support Western's claims.

We recommended that Western take immediate action to dispose of their Government-owned aircraft in a manner most economically beneficial to the Government and follow OMB Circular A-76 in developing reliable information to support the future acquisition of products and services available from commercial sources. Management did not concur in the findings and recommendations and maintained that their airplane was cost effective, and that the acquisition was fully justified.

OVERTIME COSTS FOR E.I. DUPONT DE NEMOURS & COMPANY EMPLOYEES AT SAVANNAH RIVER PLANT ($1.6 MILLION)

The Department's operating contractor at the Savannah River Plant used employee overtime rather than hiring additional employees to meet production schedules. We found that premium costs paid to employees working overtime for the last three years, but adjusted for the contractor's budgeted goal of five percent overtime, exceeded the cost of hiring additional employees to meet production schedules by $5.5 million. Based on the year with the lowest cost difference, we estimated that annual savings of $1.6 million could be expected if the contractor conducted and followed the recommendations of competent cost benefit analyses of overtime and maintained reasonable overtime goals.

OVERTIME COMPENSATION AT THE DEPARTMENT OF ENERGY ($500,000)

Overtime payments were in excess of $2 million annually in the two years (1982 and 1983) prior to our audit.

Our audit showed that employees at grades 13 and above were receiving approximately $200,000 a year in overtime. We reported that this practice was directly contrary to departmental directives and that these yearly overtime costs could be saved by management following the existing directives and having personnel grades 13 and above receive compensatory time instead of overtime pay.

We also reported that excessive overtime was being paid because management was not following prescribed procedures for time and attendance, approval of overtime in advance and overtime authorizations. We reported that clarification of procedures and stricter adherence to the procedures would save about $300,000 yearly by decreasing existing overtime payments by 15 to 20 percent.

Although management concurred with our recommendations they have not yet implemented all of the recommendations due to consolidation of the DOE Payroll System and other considerations. We are currently conducting followup audits to determine the actual decrease in overtime pay and the resulting savings.

It should be noted that at the time of our review only about 7,800 of DOE's 16,000 employees were being paid through the Headquarters Payroll System. Since our report was issued the Payroll was consolidated and now pays over 16,000 employees. Additional savings in overall overtime payments can be expected from improved internal controls put in place by management as a result of our initial audit.

OFFICE OF MINORITY ECONOMIC IMPACT

Mr. Bevill. Please describe some of the success of your program in FY 1985 and FY 1986.

Ms. Flowers. I would like to provide that for the record.

SOCIO-economic research and policy assessments—1985

The research capabilities were improved through enhancement to MEAM.

Analyses were completed on specific energy policy issues such as the impact on minorities and low-income households of the proposed EPA action to reduce leaded gasoline use.

1986

Regional-based information was added to the data bank to (1) improve the quality of the data, (2) update the socio-economic and energy use patterns information, and (3) to facilitate relevant forecasting of residential and transportation energy demand for appropriate impact assessments.

A technical information document and regional market penetration information designed to assist minority business to identify economic opportunities was developed and disseminated.

Management and technical assistance 1985

The Minority Honors Training Program maintained an 80 percent job placement statistic for honor graduates.

MI cosponsored, with energy industry participants, comprehensive technical energy seminars for students and minority business enterprises at individual educational institutions.

Increased the level of cooperative arrangements between the National Laboratories and HBCUs.

Developed and made operational the Minority Energy Information Clearinghouse.

1986

Support the establishment of energy research centers at minority institutions.

Develop and support innovations in private sector partnerships with minority educational institutions.

Continue to advise the Secretary, through the Minority Economic Development Program, about the impact of energy activity on minority business enterprises

(MBE's), and develop wasys to assure MBE's are afforded an opportunity to participate fully in the energy programs of DOE.

Financial assistance program 1985

Continued to provide loans.

Continued the Minority Bank Development Project; increased deposit levels in minority banks to $400,000 per bank. In addition, $3.8 million was deposited in minority savings institutions.

1986

Initiated an evaluation study of the Loan Program, while continuing to provide loans and other financial assistance to minority business enterprises.

Approximately $60 million in consent order (non-appropriated) funds will be on deposit in 160 minority financial institutions.

Mr. **Bevill.** Please explain the reduction in the Minority Honors Training Program.

Ms. **Flowers.** Because of competing funding resources, a program decision was made to transfer funding from the Minority Honors Training Program (two-year colleges) to the Minority Educational Institution Assistance Program (four-year colleges and universities). This decision was made with the intent of spreading limited funding resources from two-year vocational training programs to four-year minority educational institutions for infrastructure development, private sector interrelationships and energy-related science and technology research centers starting in 1986.

Consequently, the FY 1986 adjusted appropriated funding for the Minority Honors Training Program of $402,000 was reduced to $121,000 in FY 1987, which will support two of the nine colleges presently participating in the program.

Mr. **Bevill.** Please explain the deferral of funds from FY 1986 for the Minority Educational Institution Assistance Program.

Ms. **Flowers.** The adjusted FY 1986 funding for the Minority Educational Institution Assistance Program is $785,000. This amount includes $90,000 that was in the President's request for the program in FY 1986. The President's FY 1987 budget request will defer $393,000 of the FY 1986 adjusted appropriation to FY 1987 to allow for the continuation of this program.

Mr. **Bevill.** Please provide a detailed justification of the proposed deferral of $393,000 submitted with the President's FY 1987 budget.

Ms. **Flowers.** The Minority Educational Institution Assistance Program is a comprehensive program designed to broaden the base of competitive research and development in energy research. This program was initiated in FY 1986. The purpose of this program for four-year colleges and universities is to:

1. Initiate collaborative research and development clustering at minority institutions.
2. Develop energy-related science and technology research centers at minority educational institutions.
3. Identify and institute arrangements between minority institutions that expand the private sector support provided to these institutions.
4. Develop linkages between minority community, technical and junior colleges and minority four-year institutions to increase the pool of minorities engaged in science and technology.
5. Support the development of joint activities between minority educational institutions and the private sector.

Of the $785,000 total program funds, $392 is planned for FY 1986. $393,000 of deferred funding from FY 1986 to FY 1987 will permit a reasonable steady program growth over two years.

POLICY, PLANNING AND ANALYSIS

Mr. **Bevill.** Please describe some of the major energy policy issues you are developing and describe how these are implemented by the program offices.

Ms. **Elferink.** The Office of Policy, Planning and Analysis serves as a principal advisor to the Secretary of Energy for formulating national energy policy issues. Current policy analysis areas include future electricity supply requirements, natural gas decontrol, future coal demand, energy trade, energy conservation financing, emergency preparedness, energy projection and environmental assessments. Analysis and evaluations are used to assess present and future program needs.

The Secretary of Energy holds each Assistant Secretary responsible for policy issues related to his or her program area.

Mr. **Bevill**. Please provide a listing of the studies conducted by your office in FY 1985, FY 1986, and planned for FY 1987. Please state the cost of each and how the studies resulted in a change in DOE policy.

Ms. **Elferink**. The studies for FY 1985 and FY 1986 are shown in a listing, along with our FY 1987 study plans, which I would like to insert in the record.

[The information follows:]

STUDIES CONDUCTED BY THE OFFICE OF POLICY, PLANNING, AND ANALYSIS (IN THOUSANDS OF DOLLARS)

	FY 85	FY 86
Natural Gas Issues		
New Natural Gas model	140	102
Industrial gas demand	50	
North American Gas Trade Model	50	30
Natural Gas 2-Market Model Analysis	40	100
2-Market Model improvements	40	30
Harvard gas study		25
Household demand for energy	45	
New Gas Model - research	5	
Downstream natural gas market monitoring & analysis		120
Rate design	10	
Gas futures market	30	
Gas supply, demand, and price in Louisiana, Oklahoma, Texas	10	
Natural gas spot markets		6
Oil & Integrated Analysis		
Refinery Analysis	75	95
Drilling Statistics	10	
Tax Reform Analysis	84	10
Alaskan Oil Exports Analysis	12	
Energy Demand	50	
SPR Analysis	6	
IEA Sharing agreement	80	
World Oil prices		120
4 Region Trade Model		60
Tanker Rates		70
Oil Trade Model		100
OCS Leasing Analysis		50
World Oil Markets	40	
Energy Modeling Forum		25
Energy Projections		
Refinements, extensions and updates to energy projections models	350	300

	FY 85	FY 86
Electricity Issues		
Economics of Generating Units as a Function of Size	30	
Rate Shock	185	
PURPA Implementation Issues	45	
Nuclear Mothballing	50	
Attrition of Electric Utility Earnings	120	
Nuclear Economics	120	
Electricity-Saving Technologies	80	
Utilities as Tax Collectors	45	
Input Data/USAM Model	45	
Risks of Rewards in Electric Utility Sector	45	
Keystone Energy Futures Project		25
Economic Analysis of Canadian Electricity Imports		80
Coal Issues		
Coal Transportation Study	225	30
Coal Imports	20	
Federal Policy Impacts		30
Coal Modeling Issues	10	
Acid Rain Strategies	30	
Coal Exports		100
Integrated Study of Coal and Electricity Issues		250
Tax Analysis		
Impacts of Tax Reform Proposal on Energy Industries	165	50
Impacts of Tax Reform on Electric Utilities	85	
Technology Policy		
Projections Support (MARKAL Model)	50	
Comparison of Federal Subsidies to Different Levels	40	
Market Penetration of Alternative Technologies	70	

	FY 85	FY 86
Macro Economic & Energy Issues		
Demand Analysis Energy Use Trends	85	
Transportation Energy Demand Modeling	30	
Impact of Change GNP Structure on Energy Intensity in U.S. Economy	40	
Energy Implications of Changes in Personal Consumption Expenditures	45	55
Impact of Tax Reform on Renewable Energy Projections	100	
Development of a Methanol Transportation Fuel Market	35	55
Market for Appliance & Auto Efficiency	90	18
Evaluating the Effects of Behavior on the Effectiveness of Retrofit Programs	25	
Measuring Oil Demand in Developed and Developing Countries	35	
Analysis of the Corporate Average Fuel Economy standards (CAFE)		85
Estimating automobile fuel economy from diary data		45
Analysis of oil use trends in developing countries		120
Analysis of energy use trends by fuel types and service sector		90
Analysis of international nuclear markets		37
Analysis of energy/GNP interaction		60
Cross impact matrix application to energy price		75
Impact of stock turnover on efficiency trends		40
Impact of falling oil prices		100
Commercial and residential building demand modeling		150

At this point in the project development process, the Office of Policy, Planning and Analysis does not have a list of approved studies to be performed in FY 1987. Its FY 1987 request for policy and system studies is $4,500,000. This request will continue to provide a high level of quality for both short- and long-term studies and analyses. Results from these studies are important for the continued development and refinement of energy policy in a consistent and effective manner. In addition to short- and long-term studies, efforts will be directed toward continuous monitoring, analyzing, and forecasting of the Nation's energy production, supply, and markets.

Mr. **Bevill**. Please describe the coordination between your office and the program offices conducting policy analysis.

Ms. **Elferink**. The Office of Policy, Planning and Analysis, PPA, provides oversight of policy development and implementation, performs analyses to ensure that policy options are evaluated based on their consistency with sound economic principles. In this role, PPA identifies major policy issues for study. During the early stages of issue development, PPA consults with other program offices to solicit ideas on the appropriate analytical framework for a study or analysis, as well as assuring no duplicative analysis is underway. Where mutual interest warrants, studies or analyses are funded jointly by PPA and other program offices. As analyses or studies progress, PPA provides other program offices preliminary drafts for review and comment. This cooperative analaysis and evaluation process assures the development of policy options based on sound economic principles.

CONGRESSIONAL, INTERGOVERNMENTAL AND PUBLIC AFFAIRS

Mr. **Bevill**. Please provide a justification for each of the program reductions in your area of responsibility.

Mr. **Garrish**. Funds requested for FY 1987 for contractual support of Public, Consumer and Indian Affairs, and Competition are expected to be adequate despite reductions from FY 1986 levels. Through experience in previous years, we have found more effective and efficient means of communicating our public outreach activities; e.g., radio broadcasts and newspaper columns.

More specifically, our FY 1986 Public Affairs (PA) contract funding will be used to continue press support services and for a one-time cost to compile an inventory of all DOE communications products. These audiovisuals, exhibits and publications will also be reviewed and evaluated, as well as developing an automated inventory system. FY 1987 PA funding will be needed only to complete the automated system and continue the press support activities.

The need for contractor assistance to analyze competitive aspects of energy issues has also decreased in recent years; however, the Office of Competition may require support studies this year or next. Examples of these might be oil pipeline deregulation and investment strategies or restructured petroleum companies.

Mr. **Bevill**. Please describe the rationale for the decrease in funding for Indian Affairs in FY 1987.

Mr. **Garrish**. The Indian Affairs request is in keeping with the stated Federal intent to gradually phase out Federal funding to the Council of Energy Resource Tribes as the tribes become able to assume financial responsibility for development of their energy resources.

Mr. **Bevill**. Please provide a distribution of your proposed staffing in FY 1985, FY 1986 and FY 1987 by program area.

Mr. **Garrish**. A distribution of staffing for this Office is shown in a table which I would like to insert in the record.

[The information follows:]

CP STAFFING DISTRIBUTION

	Fiscal year—		
	1985 actual	1986 proposed	1987 proposed
Assistant Secretary and Administration	11.0	9	9
Congressional	34.5	35	35
Communications	41.8	39	39
Public Liaison	3.7	5	5
Total	91.0	88	88

ROLE OF INTERNATIONAL AFFAIRS

Mr. **Bevill**. a number of program officials responsible for activities such as Magnetic Fusion, General Science and Nuclear Energy have testified with regard to international programs involving their technologies. What is your role in these programs?

Mr. **Bradley**. The Office of International Affairs and Energy Emergencies (IE) is responsible for the promotion of a balanced and mixed energy resource system through the execution of an effective international energy R&D collaboration policy. The Office develops policy, procedures, program guidance, and cooperation planning to assure international R&D activities are fully considered in program planning and are properly coordinated. The Office is the principal Departmental participant in international cooperative arrangements, including, but not limited to, the International Energy Agency (IEA), the International Atomic Energy Agency (IAEA), and the Nuclear Energy Agency (NEA). This overall international energy R&D collaboration policy formulation is performed solely by IE for the Department.

Two recently completed studies, considering international collaboration in energy R&D, and the role of IE vis-a-vis the program divisions, conclude on the essentiality of the IE policy function in international cooperation in these programs. One of these studies—The Energy Research Advisory Board (ERAB) International Report—recommends that IE should continue to ". . . coordinate international activities within DOE and speak with a single voice on policy matters in DOE's interactions with other countries." This study goes on to observe that through IE's centralized role, ". . . DOE will better be able to weigh the technical, economic and political advantages of proposed international collaborative activities, to determine whether bilateral or multilateral regimes are more appropriate, and to insure that U.S. interests are protected."

Similar conclusions are reached by the other study, done by an ad hoc DOE task force of representatives from each program area and aimed at facilitating the implementation of the policy initiative on enhanced collaboration in energy R&D. In particular, this study observes that IE's role is "a catalyzer or facilitator . . . in enhanced collaboration . . . and should focus . . . primarily on the policy aspects. IE has an essential role of establishing, with other branches of the government, the policy framework that will guide and enhance the formation of new collaborative research and development programs."

Mr. BEVILL. Provide a breakdown of the programs directly funded by International Affairs and how these activities complement other DOE activities.

Mr. BRADLEY. Other than the activities described for the Office of International Affairs, there are no programs in DOE for which direct funding is provided.

Mr. BEVILL. Provide a brief synopsis of the major energy development programs outside the United States. What are the comparable spending levels with DOE's programs.

Mr. BRADLEY. According to data from the International Energy Agency for its 21 Member Countries, the United States and Japan are the only two countries which spend more than a billion dollars on energy research, namely $2.3 billion and $1.6 billion respectively. The next five largest R&D programs are Italy, Germany, Canada, the United Kingdom and the Netherlands who spend $569 million, $549 million, $377 million, $364 million and $115 million, respectively. For these seven countries, the spending pattern is similar, namely about 75% of their R&D budgets is directed to supporting activities related to conventional and advanced nuclear R&D. Coal R&D accounts for another 10% of these budgets. In 1985, countries with smaller economies tended to spend a larger percentage of their funds (up to 45%) on conservation and renewable energy.

For advanced nuclear research (advanced converter reactors and magnetic fusion), DOE spent in 1985 about $600 million, followed by Japan at $441 million, Italy at $308 million and Germany at $195 million. For coal R&D, the U.S. provided $257 million in 1985, compared with $146 million by Japan, $92 million by Germany and $24 million by Canada. Japan and the United States are also the largest spenders on renewable R&D ($221 million and $71 million, respectively).

On an energy RD&D per unit of Gross Domestic Product (GDP), the largest spenders are Italy and Japan; the United States ranks tenth. If nuclear is excluded from RD&D expenditures, the largest spenders on a GDP basis are Canada, Sweden and the Netherlands; the United States ranks ninth.

INTERNATIONAL POLICY STUDIES

Mr. BEVILL. Provide a listing and funding of all International Policy Studies funded in FY 1985, FY 1986 and FY 1987.

Mr. BRADLEY. A listing of International Policy Studies for the fiscal years 1985 and 1986 and new policy studies requested for FY 1987 will be provided for insert into the record.

[The information follows:]

International Policy Studies

	Cost
Fiscal year 1985 studies/projects:	
Purchasing update report entitled "Western Europe Natural Gas Industry: Market and Economic Analysis to 2000"	$4,000
Technical assistance, information management for International R&D collaboration	350,000
Incremental funding to support nuclear non-proliferation conference project	375,000
Assistance for conferences entitled: "Japan, the Middle East and the U.S.: Energy Supply and International Trade and Natural Gas and Interfuel Substitution: Issues and Prospects"	23,000
World oil tanker market reports	32,000
Pilot course on nuclear safety in furtherance of nuclear non-proliferation programs	75,000
Coal production and export capacities information collected by the Energy Information Administration	10,000
A Policy Analyses of International Natural Gas Trade	35,000
Transcription services for IEA oil industry meetings	84,000
Transcription services (Waga & Spinella)	35,000
Multi-client study on energy consumption patterns (Lawrence Berkeley Lab)	50,000
Committee meeting on research and development for CRD meeting	10,000
Total	1,083,000
Fiscal year 1986 studies/projects:	
Development of a Pacific Basin energy strategy	150,000
U.S. energy policy options for developing countries	50,000
Transcription services for IEA oil industry meetings (required by 10 CFR 209)	80,000
Coal import/export data services	20,000
Utilization of natural gas resources in developing countries	15,000
Support services for DOE obligations in the IAEA	100,000
System development for recruitment of U.S. personnel for IAEA critical positions	45,000
Support to IAEA electric system training program in China	30,000
Development of management information and approval systems for foreign travel and foreign visits and assignments	180,000
Development of management information system for international R&D agreements and commitments	60,000
Support services for coordination of international nuclear waste management activities (with NE, RW, and DP)	25,000
Alternate international energy R&D collaboration strategies and the associated benefits and costs to DOE	100,000
Analysis of international electricity trade and the energy security implications	65,000
Evaluation of priorities and benefits of U.S. technical assistance programs for the IAEA	43,000
Total	963,000
Fiscal year 1987 new international policy studies (In addition to base projects funded in fiscal year 1986)—Studies/projects:	
The development of foreign country technology profiles on key programs, individuals, organizations, and foreign policy to assist in the development of negotiating strategies	200,000
Analysis of policy factors in R&D Cooperation that will permit adequate input of past experience in the development of new cooperative arrangements	60,000
The establishment of a DOE centralized document system to provide improved access to critical information to respond to the needs of the Secretary, OMB and the Congress	25,000
Analysis of impact of Energy Technology on Energy Security to support IA participation in the formulation of an R&D Policy for IEA	40,000

	Cost
Analyses of strategies for enhanced private sector involvement in international cooperation and the trade impacts of international energy R&D cooperation	90,000
Implications of investments by the oil producing countries in downstream oil refinery and petro-chemical facilities on oil trading patterns, particularly in Europe	80,000
The investment climate for hydrocarbon exploration in LDC's and the impact on the extent of R&D activity	40,000
Changes in the structure of the world oil market and their impact on oil security	120,000
Identify remedies to factors that restrict penetration of coal (and level of U.S. coal exports) in OECD coal markets and perform cost/benefit analysis of measures to reduce/eliminate restrictions	50,000
Total	705,000

Mr. **Bevill.** Please describe the justification for the FY 1987 increase.

Mr. **Bradley.** The funding for International Policy Studies assists the Office of International Affairs in carrying out its responsibilities for formulating international energy policy, assessing and analyzing current global energy trends and developments, and advising the Secretary on international energy issues. These studies, models, data acquisitions, etc., provide a basis for examining and assessing developments in the world energy situation which may affect both domestic energy objectives and cooperative energy efforts with other nations. These policy studies provide independent views on complex and continually changing international energy issues. The Office of International Affairs requires these independent, objective views to broaden its analytical base for policy formulation.

The FY 1987 Department Request for International Policy Studies is $1,700,000. This amount exceeds by $737,000 the FY 1986 adjusted appropriation. The need for increased support is primarily related to the area of international R&D collaboration. These policy studies will provide the basis for implementing the Secretary's goal of increasing international involvement as a means of maintaining scientific momentum consistent with increasingly stringent budget requirements. Through persuasive international R&D policy that convinces our allies of the merits of increased collaboration, R&D program cost savings of more than twenty million dollars per year are clearly feasible. A draft Energy Research Advisory Board study on international R&D collaboration recommends an even stronger role for the Office of International Affairs, building upon its unique capabilities and responsibilities. Those who have carefully studied the goals and responsibilities of this office recommend increased funding in policy studies.

The IA studies provide the intellectual capital to formulate R&D collaboration policies consistent with overall foreign policy, to improve our ability to understand foreign country energy technology programs within the context of their overall energy policy. Those studies also help to develop strategies that will ensure that our international collaboration activities will provide significant benefits to this country and assist us in negotiating positions for bargaining with specific countries, including possible multiple technology arrangements.

Our policy studies money also provides the funding to develop and operate essential management information systems on our international agreements and their related commitments; on the status of agreements in negotiation and the key negotiating points; on administrative arrangements and impediments so that prompt, effective action may be taken to ensure efficient collaboration; on total foreign travel to improve coordination and reduce excess travel; and on foreign visitors and assignees to U.S. facilities to improve control of technology transfer.

BOARD OF CONTRACT APPEALS

Mr. **Bevill.** Please provide a case load analysis of the Board of Contract Appeals for FY 1985, FY 1986 and FY 1987. Provide this case loan measurement by the designated individual boards, i.e., Contract Adjustment Board, Financial Assistance Board.

Ms. **Hesse.** FY 1985, FY 1986, and FY 1987 case load analysis by designated individual boards are shown in a table which I would like to insert in the record.

[The information follows:]

	Fiscal year—		
	1985	1986	1987
Board of Contract Appeals:			
Cases pending Oct. 1	34	26	67
Cases filed	21	41	41
Cases disposed	29	55	52
Hearings and conferences	70	104	111
Claims over $1 million	9	12	11
Financial assistance appeals:			
Pending	6	3	3
Filed	1	5	6
Disposed	4	4	4
Contract adjustement applications:			
Pending			
Filed		1	1
Disposed		1	1
Patent compensation appeals	1	1	1
Other activities:			
Environmental hearings	2	2	2
Debt Collection Act [1]	2	10	10
Debarment	1	1	1
Interagency	2	4	4
Total	182	270	315

[1] Based on input from the program office.

Note.—Estimated (average with projections where appropriate).

BOARD OF CONTRACT APPEALS

Mr. **Bevill**. How much contract dollars are available to the Board of Contract Appeals in FY 1985, FY 1986, and FY 1987.

Ms. **Hesse**. The contract dollars for the Board are shown in a table which I would like to insert in the record.

[The information follows:]

Fiscal year:	
1985	$1,000
1986	1,000
1987	1,000

MANPOWER AND FULL-TIME EQUIVALENTS

Mr. **Myers**. How many full time employees has MA in 1986?

Ms. **Hesse**. There are 1085 full time employees on board, and we project a FTE usage at the end of FY 1986 of approximately 1110.

Mr. **Myers**. How many did you budget for in 1987?

Ms. **Hesse**. Management and Administration budgeted 1117 FTE's.

Mr. **Myers**. How many did you have in MA at the start of 1981?

Ms. **Hesse**. MA was not established into its present configuration until April, 1981, and at that time there were 1444 employees on board.

Mr. **Myers**. How does the percentage reduction in FTE's in MA compare with the other offices appearing before the Subcommittee today, comparing 1981 to 1986?

Ms. **Hesse**. The Management and Administration FTE reduction from FY 1981 to FY 1986 has been 20 percent. The other offices appearing before the Subcommittee ranged in FTE increases of +13 percent to reductions of −61 percent, however, it should be noted that the reductions reflect reorganizations where staff were reassigned to other organizations.

GENERAL COUNSEL

Mr. **Myers**. You mentioned your success in holding down costs for DOE—why have you not been successful in obtaining relief for the Department from the demand charges paid to TVA and others for power neither delivered nor generated for uranium enrichment?

Mr. **Farrell**. The Department of Energy's long term power contract with the Tennessee Valley Authority (TVA) requires DOE to pay a capacity charge for the contract demand, regardless of usage. These charges, common in utility contracts with long term users, are intended to defray the fixed costs (usually capital construction costs) a utility must pay to meet these customers' large electricity needs. Over the past several years, DOE has made extensive efforts to seek relief from capacity charges from all three suppliers to DOE's uranium enrichment complex: TVA, Ohio Valley Electric Corporation (OVEC) and Electrical Energy Incorporated (EEI). Efforts to negotiate a reduction in demand charges with TVA have proved unsuccessful because, according to TVA officials, relieving DOE of its demand charge obligation would result in an unfair increase in power rates to other TVA customers. TVA, which has a surplus of electrical generating capacity for the TVA region, is prohibited under the TVA Act from selling outside this region. In addition, TVA has refused to permit DOE to attempt to market excess TVA power outside the TVA marketing area. In contrast, OVEC and EEI have released DOE from demand charges to the extent that there are other purchasers for the excess electricity. Efforts to obtain relief from TVA are continuing.

Mr. **Myers**. Why have so many gas pipeline and distribution firms been successful in obtaining relief from take-or-pay obligations and DOE is not? Are any of their legal arguments applicable to the DOE power contracts?

Mr. **Farrell**. All Department of Energy natural gas requirements are purchased from gas distribution companies. This is purchased pursuant to state public utilities commission approved retail tariffs which do not contain the take-or-pay obligations generally found in gas producer and pipeline company contracts. In accordance with DOE's ongoing program to minimize its energy bills, the Albuquerque Operations Office is competitively procuring natural gas to be used at seven DOE sites.

MINORITY EDUCATIONAL INSTITUTIONS ASSISTANCE PROGRAM

Mrs. **Boggs**. I am particularly interested in the Minority Educational Institutions Assistance Program. What is the status of funding for this program in the current fiscal year and in FY 1987? What is the value of this program?

Ms. **Flowers**. The adjusted FY 1986 funding for the Minority Educational Institution Assistance Program is $785,000. This amount includes $90,000 that was in the President's request for the program in FY 1986. The President's FY 1987 budget request will defer $393,000 of the FY 1986 adjusted appropriation to FY 1987 to allow for the continuation of this program.

The purpose of this program for four-year colleges and universities is to:

1. Initiate collaborative research and development clustering at minority institutions.
2. Develop energy-related science and technology research centers at minority educational institutions.
3. Identify and institute arrangements between minority institutions that expand the private sector support provided to these institutions.
4. Develop linkages between minority community, technical and junior colleges and minority four-year institutions to increase the pool of minorities engaged in science and technology.
5. Support the development of joint activities between minority educational institutions and the private sector.

These activities are essential if the minority institutions are to continue to progress in the development of minority scientist and engineers in the coming years who are competitive in mainstream technologies.

SELLING THE PMA'S

Mrs. **Smith**. Multipurpose dams provide a number of public benefits, including flood control, navigation, recreation, irrigation and municipal and industrial water supply. Who will coordinate these public benefit functions when the PMAs are sold, and how will they be coordinated? Who will coordinate the flow of the river? Which function will be given priority?

Ms. **Hesse**. The generating agencies, the U.S. Bureau of Reclamation, Corps of Engineers, and U.S. Boundary and Water Commission, will to the extent currently authorized by law, continue to operate the dams to meet the multiple purposes Congress intended. The water functions of these projects will continue to be carried out.

Mrs. **Smith**, Under current law, PMAs must repay to the Federal Government all costs of construction, operation and maintenance for Federal power production and transmission—including principal and interest. As you know, the price of Federal power is based on the cost of production. How would cost-based pricing be affected by the sale of PMAs? Can we assume that consumers would pay more for their power?

Ms. HESSE. It is too early to provide specific answers. Rates paid for power would be determined by the sale price, method and term of financing, and the type of purchaser. Rates could be further affected by taxes, insurance costs, return on investment and rate oversight/regulatory considerations. The rate could either increase or decrease depending on these factors.

Mrs. SMITH. What do you consider to be a fair sale price for the PMAs? For how much would you sell the Western Area Power Administration? Do you base your estimate on market price? Replacement costs? Debt still owed to the Government?

Ms. HESSE. The current assumption is that the sale price would be the amount of the unpaid Federal investment at the time of sale. However, we fully recognize that the actual sales prices and timing of the sales could differ from current projection. Over the 5-year period of FY 1987–1991, based upon the above current assumption, defederalization of the power marketing administrations will contribute $13,879 million toward deficit reduction, of which $1,888 million would be offset as future foregone revenues. $2,672 million of that amount will be attributable to the sale of the Western Area Power Administration.

DOE MAJOR FACILTIES PROGRAM REPORT BY THE HOUSE SURVEYS AND INVESTIGATIONS STAFF

Mr. BEVILL. Would you comment on the report of the Department of Energy's Major Facilities Program conducted by the House Appropriations Committee Surveys and Investigations Staff, dated February 1986?

Mr. HERRINGTON. The Department's budget and project management systems have been in existence for several years and have been revised occasionally to satisfy Congressional and Administration needs. We believe these systems serve the Department's and the Congress' needs well, and we intend to continue to develop and improve them. Toward that end, we will draw upon our past experiences to help us accomplish our programs and projects in the most effective and efficient manner possible. The report makes a number of valid points and we have already taken action to further strengthen our project management processes.

For example, based on discussions with the Surveys and Investigations Staff during the review, additional requirements for "special scientific or technical reviews" of projects have been initiated and included in the Project Management System procedures. At the request of the Under Secretary, the Director of Energy Research, the Secretary's scientific advisor, will form special panels to conduct these independent reviews. Various events can trigger special scientific or technical reviews, such as changes in the original assumptions on which the project was based. The Energy System Acquisition Advisory Board (ESAAB) will be used to ensure that fully coordinated evaluations of the panels' findings are performed and appropriate recommendations to senior management are made. Special attention will also be paid to the impacts on projects of changes in market conditions.

The report also contains numerous statements about individual programs and projects which we believe are refutable. Unfortunately, many of these statements appear to be based on unattributed and unsupported comments from current and former employees of DOE and its contractors. These seem anecdotal and are not developed into a body of facts that support the criticisms found in the Summary section of the report. Accordingly, it is our view that such rebuttals would not be productive. We do, however, have comments on certain aspects of the report which I would like to provide for the record:

1. Summary, page ii, para. 3 and page 3 and page 14, para. 2—The report states, "A budget examiner indicated DOE spent $600 million to complete a project reported to cost $314 million. The source of these additional funds could not be explained." The project reported to cost $314 million was the Tokamak Fusion Test Reactor (TFTR). This figure included only Construction funding. Congress requires that Operating and Equipment funding also be reported in the Construction Project Data Sheet, Schedule 44, sent to Congress. For TFTR, the Schedule 44 included $183 million of funding in these latter two categories, giving a project total cost of $497 million. In addition, the TFTR flexibility modifications (TFM), which were not included in the line item construction project and which provided for enhanced performance above and beyond the original construction project performance requirements, were recommended by DOE and approved by Congress on an annual basis. The sum of the TFM funding from the beginning, 1979, to the end, 1985, was $90 million. Therefore, the sum of the TFTR construction project and TFM funding was $587 million. The justification for all of this TFTR funding was included in the narrative of the Schedule 44 in the annual budgets to Congress.

2. Summary, Pg. iii. 3rd para. The report states, "the Mirror Fusion Test Facility (MFTF-B) was to be constructed after its design was verified by a smaller mirror project, but its management did not wait for verification." MFTF-B was proposed after the smaller tandem mirror experiment (TMX) at LLNL, had verified the basic tandem mirror concept. The rescoping from MFTF to the tandem mirror MFTF-B project was approved within DOE by a formal ESAAB action. Following ESAAB approval, DOE proposed the rescoping in the FY 1981 Congressional budget and Congress agreed. The basis for the rescoping was to permit application of available MFTF funds on the design, fabrication and construction of MFTF-B components and systems. There was no design verification condition placed on proceeding.

Concurrent with the construction of MFTF-B, the TMX was upgraded to further study tandem mirror physics, including an improvement called a thermal barrier which is a system for enhancing device performance. This feature was also incorporated in the MFTF-B.

3. Summary, page iv, para. 2, states that lessons learned from experience at Rocky Flats seem to be lost. The DOE Project Management System, which has been in place since 1981, specifically reflects the lessons learned from the construction of Building 371 at Rocky Flats. In fact, a retrospective study of that project, conducted by an independent contractor, clearly states that if the practices and procedures now contained in the Project Management System had been followed, the problems at Rocky Flats would not have occurred.

4. Summary, Pg. vii, para. 5. The report states that MFTF-B has serious design problems and that a major and costly retrofit of the facility will be necessary to correct the problems. This is not correct. MFTF-B does not have a design problem and there is no major retrofit necessary or planned. The present MFTF-B facility is capable of being operated in several tandem mirror physics modes, and the only magnet reconfiguration that has been considered involves changing the location of some of the existing MFTF-B magnets. This change would enable MFTF-B to have the same configuration as the TARA experiment at MIT. This change of magnet locations is estimated to cost $1 million dollars and it would be accomplished within the annual operating budget for the device. It is certainly not a costly retrofit involving major new components.

The report also indicates the source of the alleged MFTF-B design problem is the experimental results from the smaller tandem mirror experiment (TMX-U) at LLNL. The basic MFTF-B magnets, vessel and other components were properly designed and constructed for MFTF-B and the present configuration of the magnets is the preferred one. The MFTF-B design and construction strategy fully considered the TMX-U experiment from the outset. LLNL evaluated where TMX-U results might influence MFTF-B, and in those areas where influence might be expected, they delayed commitment to any affected components until after TMX-U results were obtained.

5. Summary, page viii, para. 2 and page 43, item 2—The reference to Congress being asked to support the fusion program at a rate of $400 million per year for 70-80 years is not consistent with the Magnetic Fusion Program Plan which establishes the current DOE strategy for the fusion program. As indicated in the program plan, the Government role extends about 20 years at which time enough scientific and technological information should be available to determine whether subsequent commercialization of fusion is possible. If such a determination were positive and if the need for fusion to augment then existing energy sources is urgent, commercialization could occur, but not likely at Government expense.

6. On page 9, the report implies that the ESAAB meeting is only a "rubber stamp." The ESAAB is an advisory board to the Acquisition Executive and to the Under Secretary who make key decisions on major system acquisitions. The formal ESAAB meeting culminates a lengthy review and coordination process among Headquarters staff offices, program offices and field offices. Independent assessments of project cost, schedule and technical performance always precede an ESAAB meeting, and numerous prebriefs are provided to ESAAB principals to ensure that views other than those of the project proponents are surfaced. Many issues are resolved during this coordination cycle so that the ESAAB need address only the major issues or concerns at the meeting. The ESAAB meetings themselves are strictly issue-oriented, not just opportunities for project advocates to argue for continuation of a project, as stated in the report. All ESAAB meetings and decisions are fully documented and include a summary of the project cost, schedule and technical baselines agreed to by the Acquisition Executive.

7. The report, on page 17, also implies that the Office of Project and Facilities Management's reviews of projects are limited to schedule considerations. This is not the case. The Office of Project and Facilities Management conducts on-site technical

(scientific and engineering) reviews; participates in annual, semiannual and periodic program office reviews of projects; develops independent cost estimates; performs reviews of real property management, maintenance management, site development, utilities management, and in-house energy management activities; directs reviews of major contractors' internal cost and schedule control systems; and analyzes cost, schedule and technical trends on ongoing projects. The office provides independent assessments of all major system acquisitions and major projects to senior level management each calendar quarter, and conducts other assessments as requested by management officials. In addition, the office plays a key role in the development of the DOE budget by performing independent validation reviews in the field of all proposed new project starts larger than $5 million. These reviews indicate whether or not project planning has progressed to the point necessary to justify inclusion in the Department's budget request, and constitute the major technical input to the Internal Review Budget process. Lack of validation severely jeopardizes a project's funding prospects.

DOE MAJOR FACILITIES CONSTRUCTION PROGRAM PROJECT INITIATION

Mr. **Bevill.** When a construction project is initiated and justified, why are completion parameters not always established?

Mr. **Herrington.** The first Construction Project Data Sheet (CPDS) that is submitted to Congress for line item funding is based upon a Conceptual Design Report (outline drawings, specifications, a schedule, and a cost estimate appropriate to the stage of development). The scope of the project is described in this and every subsequent CPDS. This scope constitutes the completion parameters of the project. The line item funding permits preliminary design (Title I) to commence. Only after preliminary design is well advanced can more detailed completion parameters be firmly established. The DOE strives to reflect completion parameters as accurately as possible in the initial CPDS.

As the project proceeds into detailed design (Title II) and construction, the CPDS is modified, if necessary, for each budget request to reflect more refined and definitive design features which are generally consistent with those in the initial CPDS.

Mr. **Bevill.** If completion parameters are not capable of verification, what other means are used to determine a project's status?

Mr. **Herrington.** We are unaware of any projects which do not have verifiable completion parameters in their CPDS. Review of the Conceptual Design Report establishes whether sufficient progress has been made and a state of readiness has been reached for the project to proceed into preliminary design. As design work progresses, baselines are established so that project status can be measured and evaluated.

The Department has an extensive project management system that is utilized in the execution of the project activities. Technical, cost and schedule performance are monitored continually for project status. When problem areas develop, mechanisms are in place for alerting appropriate management officials.

Although completion parameters are capable of verification, technical difficulties in achieving required performance (such as difficulties in reaching needed magnetic field strength, etc.) can and do signal the need to modify a project's scope or even to reevaluate whether a project can be completed as designed. In such cases, Congress is notified through established procedures in a timely way.

Mr. **Bevill.** In designing experiments/research tools, at what point are construction funds no longer used? Is the project considered complete at that point?

Mr. **Herrington.** Construction funds are used for the design and construction of a facility which will be capitalized. Construction funds are no longer used on an experimental/research project or device when the scope as described in the CPDS has been met. At this point, such projects are declared completed. In certain instances, a facility may be used for demonstrating a technology and that demonstration period is considered part of the project scope. The demonstration or operation of that facility would be funded through operating expense funds. Project completion would be after completion of the demonstration period.

If the project in question is the construction of a laboratory, the original inventory of equipment is also procured with construction funds.

If the construction parameters of the CPDS are met at this point, then the Construction Project is considered complete.

Mr. **Bevill.** Is it true that DOE often calls a project complete although the facility cannot meet the criteria or scientific parameters for which it was originally designed?

Mr. HERRINGTON. No. The majority of DOE projects fully meet the technical baseline parameters set forth in the original plan and CPDS. Occasionally, major program changes will adversely impact ongoing projects; e.g., cancellation of the Clinch River Breeder Reactor Project affected several other projects which were intended to support the breeder program. Other uses for these facilities must then be sought.

It is conceivable that unexpected technical problems encountered during project development could force a rescoping of the project as cost, schedule and technical tradeoffs are considered by appropriate management officials. In such cases, Congress is notified through established procedures.

Mr. BEVILL. What funds are used to upgrade these facilities? Has DOE misled Congress into believing that when a project is "complete," it is getting what was originally designed?

Mr. HERRINGTON. A facility normally does not require upgrade to meet its original design scope. If the original design scope cannot be achieved as described in the CPDS, appropriate notification to Congress seeking additional funds to accomplish the additional scope are routinely handled through the normal budget process. If a facility requires an upgrade, to enhance its capability beyond the original scope, it would depend on the type of upgrade; i.e., modification to the structure, installation of equipment, etc., as to what type funds would be used. Upgrades are funded with line item construction funds, capital equipment or operating expense funds, depending on the scope of the modifications to be made and in accordance with DOE budget and accounting guidelines.

Mr. BEVILL. Is it true DOE has used operating and other sources of funds to make a "completed" facility ready for experimentation; e.g., bringing an accelerator's luminosity up to its design specifications?

Mr. HERRINGTON. Certain research facilities are constructed solely for the purpose of conducting scientific experiments. Once operational, such facilities are subject to further modification to accomodate new experiments. These modifications may be accomplished with operating expense funds as opposed to Plant and Capital Equipment funds, depending on the scope of the modifications to be made.

Upgrades are not part of the CPDS for a project. A project is designed to achieve certain technical objectives. Once those objectives are achieved, it is often possible to make further research advances by upgrading the facility for other purposes. It is in the government's best interest to realize economies and efficiencies by upgrading facilities where possible, to take advantage of existing government investments rather than building new facilities which duplicate some, or even most, of the capabilities available in an existing facility.

DOE MAJOR FACILITIES CONSTRUCTION PROGRAM COMPLETION OF PROJECTS

Mr. BEVILL. When DOE reports a project as "complete," does it mean complete in terms of ready for experimentation? If not, why?

Mr. HERRINGTON. Yes. As stated earlier, a project is completed when the scope outlined in the CPDS is attained; i.e., when the desired "tool" is available to conduct experiments. If it is not complete at the original scope, it is either terminated for technical, programmatic, or budgetary reasons, or it is operated at less than design goals. In either case, DOE has attempted to notify Congress in a timely manner of those projects which have not achieved original design goals.

The fact that a facility may be upgraded at a later date does not mean that the original research objectives could not be reached without an upgrade. Upgrades, as discussed earlier, maximize existing investments and allow new research objectives to be explored in the most economical way possible.

DOE MAJOR FACILITIES CONSTRUCTION PROGRAM MAJOR SYSTEM ACQUISITION (MSA) PROCESS

Mr. BEVILL. Considering a dollar magnitude of an MSA and the fact that a board of key personnel is established for the review of important decisions, why is the formal process not always followed?

Mr. HERRINGTON. The process for the review and consideration of important decisions relating to designated MSAs has been fully institutionalized in the Department and these procedures are always followed. The policy and procedures for the activities of the DOE Energy System Acquisition Advisory Board (ESAAB) have been officially published since January 1981. They have remained basically unchanged, and the current senior management has expanded the ESAAB role to include site selection and other decisions. The formal ESAAB process is utilized for the key decisions on all designated MSAs. This formal process usually includes convening the ESAAB members for a fully informed presentation, discussion of alternatives, and decision review. However, on those occasions where this single forum is not warranted because preliminary reviews indicate no substantial issues exist, a formal Action Memorandum is required for the review, concurrence and final approval actions.

Mr. Bevill. Why are not all project decisions documented?

Mr. Herrington. Project decisions, especially those related to the MSAs, are all formally documented. The ESAAB Secretariat prepares a Memorandum to the Record for each ESAAB meeting held. This Memorandum to the Record contains a summary of the decision requested, the decision made and related follow-on action items assigned, an accounting of the key issues and problems discussed, and the highlights of the acquisition proponent's readiness-to-proceed factors.

Decisions that are made outside of the formal ESAAB meeting process are documented by Action Memorandum, in approved budget submissions and in approved Project Plans. Decisions reserved for lower levels of management are also documented as they occur in the various technical and scientific reviews, design reviews, status of construction reviews, and the configuration control process.

Mr. Bevill. How can lessons be learned from previous project and management decisions if a data base does not exist?

Mr. Herrington. I believe lessons are learned from previous experience and that data bases do exist. With regard to data bases, we have, until recently, reported to the GAO each year, the status of DOE projects for inclusion in its annual report on "Status of Major Acquisition." (Note that recently this report has been replaced by a semiannual report on same directly to the Appropriations Committees). I might just note that in a recent GAO report, DOE had the best cost performance record of the six government agencies with more than $10 billion of construction underway. We utilize several different methods to obtain and benefit from lessons learned on previous and ongoing projects. Field visits associated with project budget validations, technical reviews, design reviews, and status reviews are examples of methods used to obtain lessons learned. Since these are recurring and formal processes, the documentation related to important project decisions or problems considered therein is available. In addition, the Director of Project and Facilities Management meets on a quarterly basis with the field directors of engineering and construction to discuss common project management problems, lessons learned, and ideas for improvements.

Mr. Bevill. What other approval processes exist for MSAs?

Mr. Herrington. The Under Secretary, who is the ESAAB Chairman, may choose to make a decision without a formal meeting, when the preliminary review prior to a scheduled meeting indicates that there are not substantial issues which would require a meeting. In this case, an Action Memorandum is prepared and submitted by the acquisition proponent stating the factors in support of the decision requested. This Action Memorandum is coordinated with board members and advisors before it is forwarded for decision. Following approval by the Chairman, the Secretariat documents the decision and the actions and/or agreements that may have resulted from the process in a Memorandum to the Record.

We utilize several different methods to obtain and benefit from lessons learned on previous and ongoing projects. Field visits associated with project budget validations, technical reviews, design reviews, and status reviews are examples of methods used to obtain lessons learned. Since these are recurring and formal processes, the documentation related to important project decisions or problems considered therein is available. In addition, the Director of Project and Facilities Management meets on a quarterly basis with the field directors of engineering and construction to discuss common project management problems, lessons learned, and ideas for improvements.

Mr. Bevill. What other approval processes exist for MSAs?

Mr. Herrington. The Under Secretary, who is the ESAAB Chairman, may choose to make a decision without a formal meeting, when the preliminary review prior to a scheduled meeting indicates that there are not substantial issues which would require a meeting. In this case, an Action Memorandum is prepared and submitted by the acquisition proponent stating the factors in support of the decision requested.' This Action Memorandum is coordinated with board members and advisors before it is forwarded for decision. Following approval by the Chairman, the Secretariat documents the decision and the actions and/or agreements that may have resulted from the process in a Memorandum to the Record.

The ESAAB is also utilized to obtain advice in making siting decisions involving major system acquisitions, to evaluate the results of specific technical and scientific review reports, and will be used to assist in making decisions on the divestiture of assets, such as the Naval Petroleum Reserves, the Power Marketing Administrations, and other facilities where defederalization is envisioned.

Some project decisions are made through other mechanisms such as the Departmental Internal Review Budget process, the Project Plan development and approval process, and as a result of independent project cost, schedule and technical reviews, which are performed on a continuing basis. Documentation for such decisions consist of approved budgets, approval of action memoranda, signatures on Project Plans, Trip Reports, or memoranda for the file resulting from program reviews. Depending on the magnitude of the MSA, several other discussions may take place and direct or indirect "approvals" may be obtained. These include interactions with OMB staff and management, officials in OSTP, and perhaps Cabinet discussions and interactions with the President.

Mr. BEVILL. Is the ESAAB considered a "rubber stamp?"

Mr. HERRINGTON. Absolutely not. It's very purpose is to provide an independent evaluation and review in to the Under Secretary, of the merits of a proponent's proposal. The ESAAB is an institutionalized process that is similar, in many basic respects, to the Defense System Acquisition Review Council (DSARC) at the Department of Defense. As with the DSARC, the ESAAB is a process that supports the Under Secretary, who is the ESAAB Chairman, by providing advice and assistance at key decision points for each major system acquisition and for designated major projects. It is designed to assure coordinated, objective senior level management advice to the Chairman.

The ESAAB process is much more than a single meeting of key officials reviewing a summary of the acquisition proponent's request for a key decision. The ESAAB is the culmination of a lengthy coordination process among the program organizations, the Headquarters staff and the field organizations. By the time a project comes before the ESAAB, most issues have been resolved and only the remaining major concerns require discussion and resolution by the board prior to the Chairman's decision.

DOE MAJOR FACILITIES CONSTRUCTION PROGRAM TECHNOLOGY FLAWS

Mr. BEVILL. Why would DOE blame budget shortfalls for a project's delay, rather than acknowledge a flaw in the technology?

Mr. HERRINGTON. We are not aware of blaming project delays on budget shortfalls when technology problems have actually caused the delays. It is true, however, that budget shortfalls during design and construction of any given project, usually result in stretching out the implementation and increasing the cost. Technology that is not fully developed when required in the design sequence can have the same effect and may even occur at the same time as budget shortfalls; thus, it may be difficult to discern the precise amount of delay attributable to either problem. Certainly budget instabilities do create difficulties in project management and cost and scheduling, as well as in effective rates of technical progress. In the extreme case, constant budget shortfalls can make a project technically obsolete.

Mr. BEVILL. How can Congress be expected to make decisions on the future of projects if it is not being apprised of circumstances affecting the projects success, such as flaws in technology, etc.?

Mr. HERRINGTON. The DOE has taken steps to assure that Congress is fully apprised of difficulties with construction on projects, especially in cases with previously expressed congressional concern. Beginning in November 1985, the Department is providing the Congress with a semiannual report on the status of all projects larger than $100 million, which explains reasons for changes in project cost, schedule or technical baselines. Flaws or problems in technology are reported through this mechanism. The next report will be submitted May 1, 1986. Prior to the requirements for this report, the Department provided annual reports to the Congress, through the General Accounting Office, which also contained reasons for project variances. Special reports to Congress on individual projects are also made on an "exception basis" consistent with DOE policy to notify Congress of design difficulties, scope changes, or other deviations in scope, scheduling, and cost.

Mr. BEVILL. How can DOE change its information reporting process to keep Congress fully informed?

Mr. HERRINGTON. The Department's process for reporting the status of significant projects and related circumstances, such as technology problems that are impacting the cost and schedule baselines, has recently been improved. In House Report 99-195, "Energy and Water Development Appropriation Bill, 1986," dated July 10, 1985, page 74, the Department of Energy is required to submit a semiannual report to the Committees on Appropriations for each project with a Total Estimated Cost

(TEC) of $100 million or more. The report describes the status of each project, changes since originally justified to Congress, including changes to technical scope, TEC, and the mission/purpose of the facility. The first report was submitted on November 1, 1985, and the next report will be submitted by May 1, 1986. We believe this report satisfies the needs of the Committees for oversight of large DOE Projects. Additionally, we will continue to notify Congress by way of testimony, updated project data sheets, and correspondence, of all significant project details to keep Congress fully informed.

STATEMENT OF

MARTHA O. HESSE

ASSISTANT SECRETARY, MANAGEMENT AND ADMINISTRATION

DEPARTMENT OF ENERGY

FY 1987 APPROPRIATIONS HEARING

BEFORE THE

HOUSE COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

March 13, 1986

Statement of Martha O. Hesse
Assistant Secretary For Management and Administration
Department Of Energy
FY 1987 Appropriations Hearing

Mr. Chairman, Members of the Subcommittee, I am Martha O. Hesse, Assistant Secretary, Management and Administration, of the Department of Energy. I appreciate the opportunity to appear before you today in support of the FY 1987 budget request for the Departmental Administration Appropriation, and for the Technical Information Management Program and the In-House Energy Management Program requested in the Energy Supply Research and Development Appropriation.

Testimony will be presented by other principal spokesmen for the major areas within Departmental Administration, with the exception of Jo Ann Elferink, Acting Director for the Office of Policy, Planning, and Analysis and George J. Bradley, Acting Assistant Secretary for International Affairs and Energy Emergencies, who could not attend today's hearing. I would, however, like to submit their prepared statements for the record. With me today are J. Michael Farrell, General Counsel; Geraldine P. Flowers, Deputy Director of the Office of Minority Economic Impact; Theodore J. Garrish, Assistant Secretary for Congressional, Intergovernmental and Public Affairs; and John C. Layton, Inspector General. Each will address the budget request for their respective offices.

First, however, I will present a brief overview of the budget request for fiscal year 1987. The FY 1987 Budget Authority for these activities is $315.3 million. This includes $155.1 million for salaries and related expenses, $132.9 million for support services and capital equipment, $16.5 million for In-House Energy Management and $10.8 million for the Technical

Information Management Program. In addition to these activities, $115.1 million is requested for the Cost of Work for Others Program, which will generate $143.4 million in revenues. An additional $108.5 million in other revenues will be generated from the sale of incidental by-products.

My testimony on Departmental Administration will cover Management and Administration, the Office of the Secretary, five multi-purpose Operations Offices, and the financial accounts of Cost of Work for Others and Miscellaneous Revenues. Under the Energy Supply Research and Development Appropriation, I will discuss the In-House Energy Management Program and the Technical Information Management Program.

ACCOMPLISHMENTS

During the past year, we have implemented a number of management improvements aimed at increasing administrative and fiscal efficiency and effectiveness:

- The Department's personnel and payroll system, PAY/PERS, has been expanded to support 95% of the field offices, with full implementation to be completed by July 1986. In addition, we are currently providing personnel system support to several outside agencies, the Inter-American Foundation, the African Development Foundation, the Occupational Safety and Health Review Commission and the Office of the Federal Inspector for the Alaska Pipeline.

- The DOE-wide Departmental Integrated Standardized Core Accounting System (DISCAS) was successfully implemented. This is a major step in working toward the Administration's objective of implementing within each agency a uniform accounting system to improve the quality, integrity, and timeliness of financial information.

° An Automated Office Support System training program was established which covers the full range of microcomputer software products supported at Headquarters. Also, a training center was established to accommodate microcomputer, word processing, and all other ADP training for Headquarters' personnel. Over 3,300 employees attended these courses in FY 1985.

° The Department has successfully negotiated pension language in the contracts of most operating contractors to ensure that upon termination of the contracts, excess assets will revert to DOE after contract pension obligations have been satisfied.

° Goals were established for the timely closeout of inactive contractual instruments. These efforts resulted in contract closeout of more than 6,800 instruments. These activities have greatly reduced the inventory of inactive contracts.

° Small and Disadvantaged Business participation in DOE procurement and financial assistance awards was improved. During FY 1984, we achieved $2.3 billion in the small business programs and $292 million in the minority business programs. These figures rose to approximately $2.5 billion and $310 million, respectively, for FY 1985.

° DOE fully implemented the requirements of the Competition in Contracting Act of 1984 (CICA), Public Law 98-369. With the support of the Secretary, we established a Competition Advocacy program agency-wide which included naming competition advocates, training, utilization of data, advance planning, compliance reviews and congressional reporting.

- The Office of Scientific and Technical Information Management implemented an online retrieval system which provides classified research results, in a controlled environment, to authorized users on a nationwide basis utilizing encrypted and secure voice equipment.

MANAGEMENT AND ADMINISTRATION

Management and Administration provides the essential management and institutional systems and services necessary to support the Department's programs and missions. A major goal of Management and Administration continues to be the reduction of administrative overhead, and the promotion of increased efficiency and effectiveness in management, administrative and financial support systems and services. The FY 1987 program request of $146.1 million for Management and Administration includes funding for employee salaries, benefits and travel for the Office of Administration, the Office of Controller, and the Procurement and Assistance Management Directorate. The request also includes support service costs for Headquarters employees. Of the $146.1 million requested in FY 1987, $49.1 million is for salaries and benefits for 1,117 full-time equivalents and $2.5 million for related travel. The support services request of $94.5 million includes items such as space rental, supplies, transportation, communications, computer systems, printing and the purchase of capital equipment. It should be noted that $6.0 million of Management and Administrations's request will be financed by prior year deobligations, resulting in a budget authority request of $140.1 million.

OFFICE OF THE SECRETARY

The request for the Office of the Secretary includes $1.9 million for salaries, related expenses and travel costs to support 31 full-time equivalents.

OPERATIONS OFFICES

Five of the eight Operations Offices are multi-purpose and are therefore funded within the Departmental Administration Appropriation. These are Chicago, Idaho, Oak Ridge, Richland and San Francisco. Of the $94.2 million requested in FY 1987, $66.8 million is for salaries and benefits for 1,601 full-time equivalents; $1.9 million for travel expenses; and $25.5 million for space rental, utilities, supplies, transportation, communications, related support services and capital equipment. These five multi-purpose Operations Offices support research and development activities through contract administration and day-to-day management oversight of Government-Owned Contractor-Operated facilities; design, engineering and construction management; procurement; property and real estate management; contractor industrial relations; financial management; and management of related support services. The other three Operations Offices primarily support Defense Activities and are funded by the Atomic Energy Defense Appropriations. These are Albuquerque, Nevada and Savannah River.

COST OF WORK FOR OTHERS AND MISCELLANEOUS REVENUES

Cost of Work for Others covers expenses for products and services to non-DOE organizations when such products or services are not generally available from alternate sources. Examples of such products and services include special reactor materials, isotopes, and irradiation and test reactor services. The FY 1987 estimate is $115.1 million. The Department will receive an estimated $143.4 million in Associated Revenues as reimbursements for this work. Miscellaneous Revenues estimated at $108.5 million are also earned from the sale of by-products, such as reactor steam and reprocessing irradiated fuel.

IN-HOUSE ENERGY MANAGEMENT

The FY 1987 request for In-House Energy Management is $16.5 million. The requested amount reflects a continuing investment to improve the energy efficiency of DOE buildings, facilities, and processes through quick payback projects. The program of retrofits proposed for FY 1987 has a payback period of 2.2 years and a rate of return on investment of over 35 percent. These retrofit projects reduce utility costs in the outyears for all DOE programs at the affected sites. The In-House Energy Management Program is centrally managed, which enables the Department to maximize the return on investment by competing projects DOE-wide on the basis of return on investment. The proposed funding also continues energy conservation surveys to identify future retrofit projects; central plant studies to evaluate the economic feasibility of cogeneration of electricity and other central plant improvements; and model energy conservation programs such as a steam trap improvement program for the Department's central steam distribution systems, and a boiler operator training program.

TECHNICAL INFORMATION MANAGEMENT PROGRAM

The Technical Information Management Program is a centralized scientific and technical information resources management function for the Department's program managers and contractors. The major responsibilities of this program are (1) the development of specific DOE-wide policies, procedures, and guidelines for the management of DOE's scientific and technical information; (2) oversight and program evaluation responsibility to ensure that R&D information resources are effectively managed; (3) the management of an international program to allow the U.S. to capitalize on the availability of technical information generated through other nation's energy research and development; and (4) management of the Technical Information Center, DOE's centralized scientific and technical information facility. The FY 1987 budget request for the Technical Information Management Program is $14.7 million, which includes $13.8 million for operating expenses and $0.9 million for the purchase of capital equipment. Of this $14.7 million, it is proposed that $3.9 million will be reprogrammed from prior year unobligated authority, resulting in a budget authority request of $10.8 million. This request includes support for 175 full-time equivalents.

Mr. Chairman, this concludes my presentation. Mr. Farrell is prepared to speak to the activities of the Office of General Counsel.

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202 252 5644

BIOGRAPHY

MARTHA O. HESSE

Martha O. Hesse was named Assistant Secretary for Management and Administration, U.S. Department of Energy (DOE) on November 10, 1982, pursuant to a recess appointment granted by President Reagan. She was confirmed for the position by the Senate on December 8, 1982.

In this position, Ms. Hesse is the principal business officer and adviser to the Secretary. She has direct or oversight responsibilities for $22 billion a year and 135,000 government or contractor employees, including budget, personnel management, contracting and procurement and finance accounting. She is also a member of the President's Council on Management Improvement.

Before joining DOE, Ms. Hesse was Executive Director of the President's Task Force on Management Reform, located in the Office of Management and Budget.

From February 1981 until her White House assignment, Ms. Hesse was Associate Deputy Secretary of Commerce, where she provided direct support to the Deputy Secretary in administering the overall operations of the Department and resolved major policy and program operation issues that arose among the bureaus of the Department.

A prominent Chicago businesswoman, Ms. Hesse in 1969 became director and chief operating officer of SEI Information Technology in Chicago. As co-founder of this professional services company, she held key management positions and directed the company's business activities.

From 1966 to 1969, Ms. Hesse was Director of the Data Management Division, American Hospital Association. From 1964 to 1966, she was a research analyst with the Blue Shield Association.

Ms. Hesse attended the University of Iowa, majoring in psychology, and received an MBA (The Executive Program) from the University of Chicago in 1979. She currently serves as Vice Chairman of the Dean's Fund at the University of Chicago's Graduate School of Business.

August 1985

Statement of J. Michael Farrell
General Counsel
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman and members of the committee, I would like to submit this statement for your consideration of the Fiscal Year 1987 budget request for the Office of General Counsel.

The Office of General Counsel provides the legal services necessary for the Secretary of Energy and the Department as a whole to accomplish their goals. These services cover the entire range of the Department's activities, with the exception of the Federal Energy Regulatory Commission. Our activities include legal counselling, legislative drafting, development of regulations, and the conduct of litigation. In addition, the office administers the Department's Standards of Conduct and Patent programs.

During the past year the office contributed to the Department's success in achieving numerous objectives. One of the most visible ways we have served the Government's interests is through litigation. Our attorneys, in conjunction with Department of Justice attorneys, have represented the Department and the Government in an increasing number of lawsuits. During the past year the Department has been directly involved in more than 300 cases, and indirectly involved in an additional 300 cases. Much of this litigation stems from claims of radiation injury. Currently there are more than 130 radiation related cases, involving over 5,000 plaintiffs and several billion dollars in claims.

We have been successful in key cases. One hundred and thirty-five claims for approximately $500 million dollars arising from nuclear weapons testing in the Pacific were dismissed by a federal court in California. That court also upheld the constitutionality of Section 1631 of the Department of Defense Authorization Act of 1985 which substitutes the U.S. for DOE contractors in all similar radiation cases.

Other significant successes not related to radiation include what is thought to be the largest civil judgment ever recovered by the government. The U.S. Supreme Court left standing a ruling that Exxon Corporation had overcharged consumers 815 million dollars for crude oil. The court ordered the money to be distributed among the states for use in energy conservation programs. Additionally, in January of this year, the Department, through court victory, saved from certain closure the nation's only coal gasification plant. The loans for the plant were guaranteed by DOE. After default on the loans by the plant operators, gas purchasers attempted to terminate their purchase contracts. In a suit filed by DOE to foreclose its interest in the plant, the Department succeeded in enforcing the gas purchase contracts which have permitted the plant to continue in operation and preserve the interests of the Department.

Another significant activity is our effort, in conjunction with the Economic Regulatory Administration, to conclude promptly and properly the remaining cases arising under the now-expired Emergency Petroleum Allocation Act's (EPAA) crude oil and petroleum product price control regulations.

Duplicative efforts between the Office of General Counsel and the Economic Regulatory Administration were eliminated and management of both litigation and the settlement process was improved through the consolidation of EPAA enforcement cases and the transfer of the General Counsel personnel responsible for those cases to ERA last year. The cases arising out of the Department's decisions to conclude the entitlements program will remain in the Office of General Counsel as do the personnel required to defend the Department's EPAA deregulatory actions.

Not only have we been successful in our litigation efforts to defend and pursue the Department's interests, we have also been able to promote efficient use of our budgetary resources. For example, by intervening in state level utility ratemaking proceedings affecting the Department's numerous facilities, we have succeeded in keeping the Government's utility costs as low as possible. Since 1981 such interventions have resulted in savings of 16 million dollars in annually recurring costs to the Government, and in $7.7 million in savings from nonrecurring costs. Pending rate cases could result in additional savings of approximately $11.25 million.

Although our litigation efforts are possibly the most visible means by which we provide legal support to the Department, other legal services which we provide may have an even greater impact over the longer term. For example, this office is actively engaged in facilitating the Department's participation in the legislative process. During this session of the Congress it is expected that bills will be considered concerning the Natural Gas Policy Act of of 1978, the Price-Anderson Act, and the President's defederalization initiatives. We will also be assisting the Department in reaching a position regarding Superfund reauthorization. We participated in a similar role last year with the Low-Level Radioactive Waste Policy Act.

The legal counsel this office provides also affects the conduct of the Department's most critical programs. In the nuclear area, we continue to be active in the implementation of the Nuclear Waste Policy Act of 1982 (NWPA). We assisted in the promulgation of guidelines under the NWPA for the Recommendation of Sites for Nuclear Waste Repositories and the preparation of draft Environmental Assessments for the nine possible sites. Other important objectives of the Department which were facilitated by our legal services include the completion of Environmental Impact Statements on the restart of the L-Reactor at our Savannah River facility and the disposal of decommissioned nuclear submarines.

The emergency preparedness activities of the Department continue to require our extensive support. During the last year we participated in the International Energy Agency's (IEA) Fifth Allocation Systems Test and successfully completed a million barrel test sale from the Strategic Petroleum Reserve (SPR).

A final area this office has devoted considerable efforts during the past year concerns regulatory reform. We attempt to minimize regulatory burdens while ensuring that accountability to agency goals is met. For example, we have been able to reduce greatly the recordkeeping formerly required pursuant to the Emergency Petroleum Allocation Act's allocation and price rules. We also provide program support to the Department in the wake of judicial findings regarding federal energy efficiency standards for eight major household appliances covered by the Energy Policy and Conservation Act.

In the future, this office will be pursuing a number of additional important objectives, such as completion of Environmental Assessments under the NWPA for the recommendation and nomination of three sites for characterization. In addition we will assist the Office of the Assistant Secretary for Defense Programs in initiating the upgrade of DOE's physical security programs for the protection of nuclear facilities, nuclear materials and classified information. This includes the development of policies and procedures on arrest and use of force.

Continued diligence and dedication to fiscal responsibility in the review of the Department's multi-billion dollar procurement program is another DOE objective. We will continue to devote considerable resources to the development of the Clean Coal Technology program, an effort to enter into cost-sharing projects with the private sector to demonstrate feasibility of the technology for future commercial applications. Additionally, we continue to support implementation of recent legislation and the President's patent policy to transfer Department-owned invention rights to contractors and thereby facilitate commercialization.

By ensuring that the activities of the Department are conducted in a manner which fully comports with the law, while avoiding the imposition of unnecessary requirements and burdens, this office has made significant strides in contributing to our national energy policy. That policy is to foster an adequate supply of energy at reasonable costs.

The FY 1986 appropriation is $9,715,000. Our budget request for fiscal year 1987 is $9,953,000. The FY 1987 request will provide $8.8 million for 166 FTE's and the remaining $1.1 million will be utilized for this office's support funding. In addition to the 166 FTE's, an additional 4 FTE's, to be funded from the Nuclear Waste Fund, are being requested for this office.

With this budget we believe we can continue to provide the professionalism in rendering legal services which this office has furnished to the Department since its formation.

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

J. MICHAEL FARRELL

J. Michael Farrell was confirmed by the Senate on May 15, 1985 and sworn in by the Secretary of Energy on May 21, 1985 as General Counsel for the U.S. Department of Energy (DOE). As DOE's General Counsel, Mr. Farrell is responsible for the Department's legal programs and policies with the exception of those related to the Federal Energy Regulatory Commission, which maintains a separate legal staff.

Since 1983, Mr. Farrell practiced law in Washington as counsel to the law firm of Glynn & Graham; 1982-1983, he was Private Sector Coordinator of the Caribbean Basin Initiative at the Department of State; 1981-1982, Deputy Director, Office of Presidential Personnel, White House; 1981, Assistant Counsel, Office of the Counsel to the President, White House; 1968-1981, member of the law firm, O'Connor & Farrell; and 1978-1980, adjunct professor of law, Georgetown University Law Center.

He received a B.S.B.A. from Georgetown University in 1963 and a J.D. degree from the Georgetown University Law Center in 1966. Mr. Farrell is a member of the District of Columbia Bar and the Federal Bar Association.

Mr. Farrell was born and resides in Washington, D.C. He is married and has three children.

July 1985

Statement of Geraldine P. Flowers
Deputy Director
Office of Minority Economic Impact
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman, Members of the Subcommittee:

I am Geraldine P. Flowers, Deputy Director, Office of Minority Economic Impact (MI). I appreciate the opportunity to discuss the MI budget request for fiscal year 1987.

MI was established in November 1978, pursuant to Section 641 of the National Energy Conservation Policy Act (Public Law 95-619). Its legislative mandate is to advise the Secretary of Energy on the impact of the Department's energy policies, regulations and programs on minorities, and to undertake program activities that would ensure that minorities and minority businesses are afforded an opportunity to participate fully in the Department of Energy's programs.

To assure participation in DOE's program activities at all levels MI is responsible, within the Department, for a number of ongoing minority program activities in three major categories. The categories are socio-economic research, management and technical assistance and financial assistance. Research activities include the updating and maintainence of the regional minority data bank, and improvements of the capabilities of the Minority Energy Assessment Model "MEAM"; providing socio-economic and other information and related analyses for specific policy and programmatic efforts within DOE and relevant Federal agencies at the regional level; and identifying and defining economic opportunities for minorities in various segments of the energy industry through economic analyses, feasibility studies and other technical assistance.

The activities in the Management and Technical Assistance area are a Minority Economic Development Program, an Honors Vocational Training Program in energy-related technologies, a Minority Energy Information Clearinghouse effort and a Minority Educational Institution Assistance Program. The Institutional Assistance Program is designed to encourage the development of an increased research infrastructure at minority institutions. MI is responsible for coordination of the Department's implementation of Executive Order 12320, The Historically Black Colleges and Universities Initiative (HBCU). DOE program awards to the HBCUs in FY 1985 increased to $8,074,534 compared to $1,899,000 in FY 1982. This increase enhances DOE's potential to assure a broad base of research and development at our minority educational institutions.

There are two programs in the Financial Assistance category. They are the Loan Program which is set forth in Public Law 95-619 and the Minority Financial Institutions Development Program. The latter program is designed to help minority financial institutions make loans and investments in the communities they serve, by providing a stable deposit base in the form of Certificates of Deposit from consent order funds.

The MI request for FY 1987 is $1,789,000. The following table provides a more detailed breakout.

	FY 1986	FY 1987
Research Program	$ 589	$ 765
Management & Technical Assistance Program	1,477	435 1/
Financial Assistance Program	-	- 2/
Program Direction	530	589
	$2,596	$1,789

FY 1987 BUDGET HIGHLIGHTS

In Research, MI will:

- Continue to incorporate national and regional economic, residential and transportation data and increase the level of minority representation information; enhance the Minority Energy Assessment Model's (MEAM) capability by updating and incorporating new modelling methodologies and options.

1/ A deferral of $393,000 from FY 1986 for the Minority Educational Institution Assistance Program will be utilized in FY 1987 to enable continuation of this program for the second year.

2/ Funded from the FY 1986 carryover balance.

- Continue to incorporate special impact and economic studies, data and analysis on minorities into assessments for DOE legislative and regulatory actions and in the formulation of policy and programmatic options.

- Continue to focus on market research and financial planning analysis to provide minority businesses with information to assist in their planning efforts to assess business potential in specific new energy technologies.

In Management and Technical Assistance:

- The Minority Educational Institution Assistance direct support will continue to provide for a core-cadre to start-up operations of science and technology research and development centers. These centers will provide an administrative infrastructure vital to moving the minority institutions into a fully competitive posture. General technical support and research travel support will be provided to non-research oriented minority institutions. Activities to enhance private sector interaction will continue.

- Focused technical assistance will continue to be provided to minority businesses. Outreach activity and data collection will be the basis for providing advice to the Secretary. Assistance will be furnished to DOE officials on ways to increase minority business enterprise participation.

In FY 1986, some of the planned accomplishments include the following:

SOCIO-ECONOMIC RESEARCH AND POLICY ASSESSMENTS

- To augment the data bank development, some limited regional-based information will be added from other sources of data information in order to (1) improve the quality of the data, (2) update the socio-economic and energy use patterns information, and (3) to facilitate relevant forecasting of residential and transportation energy demand for appropriate impact assessments.
- The methodology of the Minority Energy Assessment Model (MEAM) will be modified to reflect compatibility with end-use characteristics and regional-based data.

- Specific socio-economic and energy-use information will be developed from the data bank and provided to the policy office and to relevant program offices so that in-depth analysis at a more micro level can be facilitated by the availability of data and other comparative information, specific minority categories at the regional level.

- A technical information document and regional market penetration information designed to assist minority businesses to identify and define economic opportunities and financial options in various segments of the energy industry will be developed and disseminated.

MANAGEMENT AND TECHNICAL ASSISTANCE

- Support the establishment of energy research centers at minority institutions.

- Develop and support innovations in private sector partnerships with minority educational institutions.

- Continue to advise the Secretary, through the Minority Economic Development Program, about the impact of energy activity on minority business enterprises (MBE's), and develop ways to assure MBE's are afforded an opportunity to participate fully in the energy programs of DOE. This program makes a concerted effort to seek out, encourage and provide technical assistance to small and large disadvantaged businesses, and it assists Departmental officials in increasing the participation of disadvantaged businesses in DOE activities.

FINANCIAL ASSISTANCE

FINANCIAL ASSISTANCE PROGRAM

- Will evaluate recommendations arising from the program evaluation study of the Loan Program conducted during FY 1985.
- Will commence to implement the relevant recommendations contained in the aforementioned study.
- Will continue to provide loans and possibly other financial assistance to minority business enterprises.

MINORITY FINANCIAL INSTITUTIONS DEVELOPMENT PROGRAM

- Will continue to administer the Minority Financial Institutions Development Program, implementing the approved increase in deposit levels in minority banks from $400,000 to $500,000 per bank.
- Will seek approval to increase deposit levels in minority thrift institutions from $200,000 to $500,000 per institution.

- Approximately $60 million in consent order funds will be on deposit in 160 minority financial institutions. This effort will continue to be funded from DOE's Petroleum Violation Escrow Account, and not with MI appropriated funds.

- Will continue to provide for administrative support for the Minority Financial Institutions Development Program.

Mr. Chairman, this concludes my remarks. I would be happy to answer any questions which you or the members of your Subcommittee might have concerning the programs of the Office of Minority Economic Impact.

U S Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D C 20585
202 252 5644

BIOGRAPHY

GERALDINE P. FLOWERS

Geraldine P. Flowers was designated Deputy Director, Office of Minority Economic Impact, U.S. Department of Energy (DOE), in January 1986. In this position, she is responsible for advising the Secretary of Energy on the effect of energy policies, regulations and programs on minorities and minority business enterprises.

Ms. Flowers has served as Director, Personnel Policies and Programs Division, Office of Personnel, DOE, since 1978. She is responsible for providing technical and administrative direction to the staff of the Division in establishing personnel management policies and programs for the Department.

Ms. Flowers' previous work experience includes: Chief, Employee Programs, Atomic Energy Commission and Energy Research and Development Administration, from 1973 to 1978; Personnel Officer, Federal Railroad Administration, Department of Transportation, from 1972 to 1973; Personnel Officer, Cost of Living Council in 1972; Position Classification Specialist and Personnel Management Specialist, Department of Transportation, from 1969 to 1972; and, Personnel Specialist, U.S. Information Agency.

Ms. Flowers is a charter member of the Senior Executive Service. She received the DOE Energy Exceptional Service Award in 1986; she also received SES Performance Award Bonuses for Accomplishments in 1981 and 1984; in 1976 she received a Special Achievement Award for Equal Employment Opportunity; and, in 1974 she was a William A. Jump Award nominee.

February 1986

Statement of Theodore J. Garrish
Assistant Secretary
Congressional, Intergovernmental and Public Affairs
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman and Members of the Subcommittee:

I appreciate this opportunity to discuss the FY 1987 budget request for the Office of Congressional, Intergovernmental and Public Affairs.

As in the past fiscal year, the responsibilities of this Office remain as multifaceted as they are demanding. Among the principal mandates and concerns of this Office are the management and coordination responsibilities in keeping the Congress fully and currently informed of Departmental activities. In addition, we are responsible for relations with a variety of energy-interested constituencies--and communications with the public-at-large. These constituencies include the news media; State, territorial tribal and local government officials; other Federal agencies; consumer, citizen, labor and business organizations; non-profit education organizations and other energy-oriented groups.

This Office is also responsible for fostering and promoting competition in the energy industry. Finally, it serves in a support and advisory role for other DOE components and in efforts to work toward the implementation of national energy policy goals.

FY 1987 BUDGET REQUEST

While the responsibilities of the Office of Congressional, Intergovernmental and Public Affairs remain unchanged, the budget request for FY 1987 is $4,915,000, a decrease of $201,000 from FY 1986. This savings is achieved through reduced contractual support.

Our FY 1987 budget request calls for $4,409,000 for program direction, a funding level sufficient to maintain 88 FTE's, the same level as FY 1986. This amount is necessary to maintain staffing levels that will enable us to carry out the Office's wide range of responsibilities.

A total of $506,000 is requested for program support. These funds are needed for support in the press services area, for the evaluation of audiovisual products and publications and for the dissemination of consumer energy information through radio spots and bi-monthly news columns. Funding is also requested for contractor analysis of energy competition issues, and to assist in development of Indian energy resources.

Mr. Chairman, inasmuch as this subcommittee has requested that this testimony include a discussion of Fiscal Year 1986 activities and accomplishments, I would like to touch briefly on our ongoing projects for the remainder of this fiscal year. I believe you will find that they justify our FY 1987 budget request and mirror the fact that this Office is an integral part of the Department of Energy--and an important conduit for the Department in implementing the National Energy Policy Plan (NEPP).

FY 1986 ACTIVITIES

During the remainder of the fiscal year, this Office's activities will be focused on:

- Coordination of Departmental efforts related to the consideration and passage of new and revised legislation in areas such as Superfund Reauthorization, acid rain/clean air concerns, nuclear licensing reform, Price-Anderson Reauthorization, energy defederalization and energy tax incentives.
- Continued efforts to maintain effective communication with the public in order to provide information on energy policy and programs.
- Participation in the development and implementation of energy programs, specifically nuclear waste management and emergency preparedness, with a special emphasis on outreach to State and local governments--and related constituencies.
- Other ongoing coordination of DOE activities in other areas with State and local governments as well as business, labor and industry, and education and consumer-oriented organizations.

- Promotion of the development of Indian energy resources through an interagency contract managed by DOE with the Council of Energy Resource Tribes.

Mr. Chairman, I believe the record of service, accomplishment and advocacy provided by the Office of Congressional, Intergovernmental and Public Affairs during the past fiscal year fully substantiates its FY 1987 budget request. The following table summarizes the FY 1986 funding level and the FY 1987 request:

	(000's)	
	FY 1986	FY 1987
Program Direction	$ 4,240	$ 4,409
Program Support	876	506
Total	$ 5,116	$ 4,915

Let me close by saying that it has been a great privilege and pleasure to work with the Congress during this past year. I look forward to a continuing and productive relationship.

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

THEODORE J. GARRISH

Theodore J. Garrish assumed the position of Assistant Secretary for Congressional, Intergovernmental and Public Affairs, U.S. Department of Energy (DOE), on May 17, 1985.

In this position he is responsible for coordinating the Department's legislative programs and DOE's relationships with Members of Congress; activities involving State and local governments; the Office of Public Affairs; the Office of the Press Secretary; DOE's Office of Competition, and Office of Consumer Affairs.

Before accepting this assignment, Mr. Garrish had served as General Counsel since May 1983. In that position he was responsible for the Department's legal programs and policies. Mr. Garrish previously served as special assistant to the Secretary of Energy, with primary responsibility of coordinating efforts on natural gas legislation. Mr. Garrish was Legislative Counsel at the Department of the Interior (1981-1982) before coming to the DOE in November 1982.

From 1978 until joining the Interior Department, he was a partner in the Washington, D.C. law firm of Deane, Snowdon, Shutler, Garrish and Gherardi. He was General Counsel at the U.S. Consumer Product Safety Commission, 1976-1978; Assistant to the Secretary of the Interior in 1976 and 1974-1975; Assistant to the Special Counsel in the White House, 1974, and senior trial attorney and chief of the Advertising Evaluation Section at the Federal Trade Commission, 1973-1974.

He received a B.A. degree from the University of Michigan in 1964 and a J.D. degree cum laude from Wayne State University in 1968. He is a member of the bar in the State of Michigan and the District of Columbia.

A native of Lathrup Village in Oakland County, Michigan, Mr. Garrish has two children and currently resides in Alexandria, Virginia.

March 1985

Statement of John C. Layton
Inspector General
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman, I would like to express my pleasure in having the opportunity to address the members of this Subcommittee. I am John C. Layton, the Inspector General of the Department of Energy.

RESPONSIBILITIES

The statutory responsibilities of the Inspector General, as stated in Section 208 of Public Law 95-91, the Department of Energy Organization Act, are to detect and prevent fraud and abuse and to promote economy and efficiency in the programs and operations of the Department of Energy (DOE). These programs encompass the work of over 16,300 employees of the Department, 130,500 DOE contractor employees at Government-owned, contractor-operated facilities, and the activities of other contractors and grantees of the Department.

The Department of Energy is a complex and multi-missioned Department with programs varying from the assembly of nuclear weapons to the funding of low income weatherization projects. Further, the Department is second only to the Department of Defense in the dollar amount of its procurement activity. Thus, the audit, inspection, and investigative requirements of DOE are extensive and varied.

ORGANIZATION

- Audits, Inspections, Investigations -

The Office is organized in three divisions with three Assistant Inspectors General. The Office of Audits performs all internal audits for the Department. The Office of Audits conducts financial and compliance, efficiency and economy, and program results audits. The Office of Investigations is responsible for the detection and prevention of fraud and abuse. The Office of Inspections is responsible for reviewing and evaluating DOE's scientific and technical programs and operations. In addition, an Office of Executive Director performs administrative, personnel, policy, planning, and management information functions for the Inspector General.

The field structure for the Office of Audits is composed of an Eastern (Oak Ridge) and Western (Albuquerque) Regional Office with 11 satellite offices, and the Capital Regional Office, located in Germantown, Maryland. The field structure for the Office of Investigations is composed of Regional Investigative Offices at Oak Ridge and Albuquerque with nine satellite offices. This organization places at least one investigator at each of the Department's Operations Offices.

The Inspector General began using private contractors to perform audit services in FY 1983. In that year, the first fixed-price contracts were awarded for financial and compliance audits of the Department's integrated contractors. Expansion of the use of outside contractors was made in late FY 1984 when additional contracts were awarded to enhance the Inspector General's ability to provide other needed contract and internal audit services. The FY 1986 budget includes $3.7 million for these audit services with an increase to $5.8 million included in the FY 1987 budget request. In addition, extensive use is made of the Defense Contract Audit Agency (DCAA) to audit DOE contracts where that organization has audit cognizance. The estimated cost of the DCAA audit services, as included in the budget request, is $5.6 million in FY 1986, decreasing to $4.5 million in FY 1987.

ACCOMPLISHMENTS

The Office of Audits completed its first full year of using the services of contractors to augment its full-time staff and perform all types of audits within the Department. The substantial commitment of resources that had been made to prepare for this innovative approach to partially accomplishing the Office's internal audit mission proved to be a good investment as productivity improved appreciably throughout the year. For example, the Office issued 161 reports in Fiscal Year 1984 and reported $16 million as potential savings resulting from audit recommendations. During Fiscal Year 1985, the Office issued 200 audit reports with recommendations which could result in potential savings of over $40 million. It is expected this growth in the number and the impact of audit reports will be sustained for the foreseeable future as the contractors gain more internal audit experience and become more familiar with the Inspector General's audit procedures.

In addition to these audit accomplishments, a number of initiatives were undertaken to assure quality work and effective management of the contractors.

-- A comprehensive management information system was developed.

-- An exhaustive resource analysis study was concluded which better identified the audit universe and produced an assessment of the audit resources required to provide adequate audit coverage of the Department's activities.

-- The third fully integrated annual workplan for all audits to be done within the Department was published.

In addition, five manuals providing audit guidance were published. These were:

1. An Audit Report Manual designed to ensure the production of uniform, concise, accurate and professional audit reports;

2. A Contract Audit Manual providing all policies to be used as guidelines in conducting contract and grant audits;

3. A Post-Award Contract Management Guide providing the procedures for technical administration of the contracts;

4. An Integrated Contractor Audit Manual providing guidance for the conduct of cyclic audits of the Department's Government-owned, contractor-operated operations; and

5. A Procedures Manual for Audits of Federally Assisted programs providing guidance on the administration and conduct of audits done of grants awarded by the Department.

The Office of Inspections directed its efforts towards the evaluation of the Department's scientific and engineering programs and projects. In this effort they had substantial success. For example, one inspection addressed facilities revitalization projects at Sandia National Laboratory. Almost $127 million in new facilities was proposed for weapons research and development upgrades without considering less costly alternatives such as refurbishing or modernizing existing facilities. As a result of our report, the program office will require that facilities being requested after FY 1986 will be fully justified in light of other alternatives, and further, that these other alternatives, and the reasons for which they were not selected, will be fully documented. The Office of Inspections also completed an inspection of nuclear safeguards and security at four DOE weapons facilities plus the Department's transportation system. Beyond the 97 actual findings that emerged and are in process of being corrected, we developed a unique methodology that will greatly impact future assessments in the allocation of some $2 billion in resources for improving security. Security personnel have indicated that this methodology represents a major contribution to their approach in addressing this complex problem, has already saved some development costs, and has the potential to introduce significant cost savings when integrated into their planned program for security upgrades.

The Office of Investigations continued its work on discovering and preventing waste, fraud and abuse. During FY 1985, 62 cases were referred to prosecutive authorities and other investigative agencies. Fifteen of the cases were accepted for prosecution. Monies identified for recovery as a result of investigative cases totaled $166,994 and investigations resulted in 4 indictments and 7 convictions (contractor employees).

The Inspector General has taken an active role in assisting the Department in meeting the requirements of the Federal Managers' Financial Integrity Act. The Inspector General is also a member of the Department of Energy's Internal Control and Audit Review Council. One of the purposes of the Council is to provide management oversight, to review the progress and make decisions about the deployment of resources to the Department's internal control efforts, and to advise the Secretary on the result of these efforts. We continue to work closely on cooperative efforts with the President's Council on Integrity and Efficiency--a combined program of the Inspectors General and the Office of Management and Budget.

The Semiannual Report covering our offices' activities for the first half of FY 1986 will be submitted to you in May 1986.

FUNDING LEVEL

The following is a description of the FY 1986 adjusted appropriation and the FY 1987 request:

	FY 1986 Adjusted Budget Appropriation	FY 1987 Budget Request
Salaries/Other Compensation	$7,491,000	$8,041,000
Benefits	797,000	1,019,000
Travel	399,000	708,000
Support Services	141,000	794,000
Contract Auditors	3,747,000	5,780,000
DCAA	5,583,000	4,500,000
Capital Equipment	-----	250,000
	$18,158,000	$21,092,000

In FY 1986 we have 178 FTEs and in FY 1987 our request is for 178 FTEs.

The Office of Inspector General continues to make steady progress in fulfilling its mandate to detect and prevent fraud and abuse and to promote efficiency and economy in the Department of Energy's programs and operations.

I appreciate the opportunity to appear today before this Subcommittee and will be pleased to respond to any questions you may have.

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

JOHN C. LAYTON

John C. Layton was nominated by the President on November 14, 1985, and confirmed by the Senate on December 16, 1985, as the Inspector General for the U.S. Department of Energy (DOE). In this position, he is responsible for the coordination, supervision, and management of audits, investigations and inspections of all Departmental activities, including those of the Federal Energy Regulatory Commission, to ensure honest and efficient management.

Prior to accepting his current position, Mr. Layton served as Inspector General at the Department of the Treasury since September 1984. In 1980 he joined the National Aeronautics and Space Administration's (NASA) Inspector General staff as Director of Investigations at the Goddard Space Flight Center in Greenbelt, Maryland, and was NASA's Deputy Inspector General from 1983 to 1984.

In 1972, Mr. Layton joined the FBI as a Special Agent. During his tenure with the FBI, he was detailed to the Surveys and Investigations Staff of the Committee on Appropriations of the U.S. House of Representatives and to the U.S. Senate Committee on Appropriations Investigations Staff. He began his career as an auditor for Litton Industries, Inc. in 1966.

A native of East Stroudsburg, Pennsylvania, Mr. Layton received his B.S. degree in commerce (accounting major) from Rider College in 1966. He was an officer in the U.S. Army Finance Corps from 1967-1969.

Mr. Layton has served as: Treasurer and Member of the Board of Directors of the Association of Federal Investigators from 1980-1985; Director of the Association of Federal Investigators Endowment Fund since 1985; Chairperson of the Ethics Board of the Association of Government Accountants since 1985; a member of the Society of Former Agents of the FBI since 1980; and was a member of the National Association of Accountants 1966-1972.

Mr. Layton currently resides in Woodbridge, Virginia.

February 1986

DEPARTMENT OF ENERGY

LIST OF WITNESSES
BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES
FISCAL YEAR 1987 BUDGET REQUEST

MARCH 13, 1986

STATEMENTS SUBMITTED FOR THE RECORD

Jo Ann Elferink, Acting Director
Office of Policy, Planning and Analysis

George J. Bradley, Jr., Acting Assistant Secretary
International Affairs and Energy Emergencies

STATEMENT OF JO ANN ELFERINK

ACTING DIRECTOR

OFFICE OF POLICY, PLANNING AND ANALYSIS

DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

UNITED STATES HOUSE OF REPRESENTATIVES

MARCH 13, 1986

Statement of Jo Ann Elferink
Acting Director
Office of Policy, Planning And Analysis
Department of Energy
Before the Committee on Appropriations
United States House of Representatives

Mr. Chairman, Members of the Subcommittee

I appreciate the opportunity to appear before you today to discuss the FY 1987 budget request for the Department of Energy's Office of Policy, Planning, and Analysis (PPA).

POLICY, PLANNING, AND ANALYSIS

ROLE AND RESPONSIBILITIES

The Office of Policy, Planning, and Analysis acts as a principal advisor to the Secretary for formulating and recommending national energy policy, and carries out analyses of DOE programs to aid them in maximizing their contribution to the achievement of national energy policy objectives. PPA provides analyses of policy issues, develops policy proposals, and coordinates these initiatives within the Department and the Executive Branch. The Office concentrates upon strategic planning issues, analysis of potential policy options, and analytical efforts required for policy development. PPA provides the Secretary with an objective policy analysis and evaluation capability.

An important policy statement which PPA oversees is the National Energy Policy Plan (NEPP). As described in the NEPP, the goal for all of the Department's energy policy actions is to foster an adequate supply of energy at reasonable costs. PPA's analytic, advisory and coordinating activities are undertaken in support of this goal and are designed to assure that DOE activities encourage energy stability, security, and strength by pursuing strategies to minimize Federal involvement in energy markets while maintaining public health and safety and environmental quality; and to promote a balanced and mixed energy resource system.

OBJECTIVES AND GOALS

Within the framework of the NEPP, specific objectives for FY 1987, formulated in response to Sections 102, 203, 657 and 801 of Public Law 95-91, the Energy Organization Act, are:

- Analyses of policy-related energy topics of Congressional, Presidential, and Secretarial concern; and
- Further development and implementation of an analytical framework for energy policy, improvement of analytic capability, and expansion of in-depth analyses to provide knowledge for areas of current and potential energy policy concern.

The major goals of the Office of Policy, Planning, and Analysis are:

- Early and accurate identification of major energy policy issues that need to be addressed through long-term studies and analyses.
- Continued development, analyses and evaluation of specific policies and programs, both in response to Congressional and Presidential mandates, and in fulfillment of more general responsibilities of the Office and the Secretary.
- A program of fundamental, long-term studies of the nature, causes and potential solutions of the Nation's energy problems, designed to lead to improved insights and to form the basis for innovation and improvement in the Nation's energy policies and programs.

ACCOMPLISHMENTS

Significant accomplishments during the past year include:

- Completed the second report required by Section 123 of the Natural Gas Policy Act of 1978.
- Prepared DOE's comments on FERC's Notice of Inquiry on interstate transportation of gas and on FERC's Notice of Inquiry on natural gas pipeline ratemaking, risk, and financial implications after partial decontrol.

- Completed Phase I of study on "Economic Analysis of Electricity 'Rate Shock'."
- Completed initial analysis of effects of partial deregulation of railroads on coal transportation costs and electric utility prices.
- Completed technical and economical analysis of automotive fuel economy issues.
- Prepared detailed analysis of energy use trends in the U.S. economy from 1972 to 1984. Results presented in national and international forums.
- Completed a study of the economy's response (in terms of energy use and efficiency) to economic growth and changing energy prices.
- Completed a multi-year project with the National Academy of Science on behavorial aspects of energy consumption.
- Initiated an analysis to project fuel shares (focusing on oil and electricity) in the residential and industrial sectors for the period 1985 - 1995.
- Prepared energy projections portion of the U.S. submission to the International Energy Agency Standing Group on Long-Term Cooperation (IEA/SLT).
- Prepared analyses of the costs and benefits of alternative "acid rain" control strategies, including utility coal conversions.

- Prepared the NEPP V required under Section 801 of the DOE Organization Act.
- Completed study assessing the economics of selected first-generation commercial nuclear power plants.
- Analyzed effects of Federal regulations on utility decisions to cancel partially built nuclear power plants.
- Completed study of the comparative economics of electric generating facilities as a function of size.
- Completed development of the Motor Fuel Consumption Model which analyses consumption trends for automotive fuels for the 1980 - 1995 period.

1987 BUDGET REQUEST

The FY 1987 request reflects a continuation of the kinds of policy initiatives which have been supported historically by the Department of Energy as a Cabinet-level agency. This request fully supports the goals and strategies set forth in the National Energy Policy Plan.

The requested level of funding is $7,855,000. The FY 1987 request includes funding for two primary program elements -- policy analysis and system studies, and program direction. A breakout is shown below.

BUDGET REQUEST

(BA in thousands)

	FY 1986 Adjusted Appropriation	FY 1987 Request
Policy Analysis and System Studies	$4,243	$4,500
Program Direction	3,205	3,355
Total	$7,448	$7,855
Total FTE's	64	64

PPA's request for policy and system studies is $4,500,000. This request will continue to provide a high quality level of both short- and long-term studies and analyses. Results from these studies are important for the development of energy policy in an orderly way. In addition to short- and long-term studies, efforts will be directed toward continuous monitoring, analyzing, and forecasting of the Nation's energy production, supply, and markets.

PPA's request for program direction is $3,355,000 which provides funding for salaries, benefits, and travel expenses to support 64 FTEs. The primary functions of the PPA staff are: review, analysis, and development of options for the Secretary on the full range of energy policy issues. Analyses typically are quantitative in nature, focusing on macro and microeconomic impacts of alternative policies on U.S. and world markets. Substantial effort is made toward identifying emerging energy policy issues for early resolution.

The budget request corresponds to the responsibilities of PPA under its mission statement. It provides manpower resources to perform its specific functions in areas critical to the continued implementation of Administration energy policy and in fulfillment of Congressional mandates. It also provides acceptable levels of policy analysis and evaluation support to the Secretary, the Congress and the President.

Mr. Chairman, this concludes my formal presentation. I would be happy to answer any questions you may have.

TESTIMONY OF

GEORGE J. BRADLEY, JR.

ACTING ASSISTANT SECRETARY FOR INTERNATIONAL AFFAIRS
AND ENERGY EMERGENCIES

DEPARTMENT OF ENERGY

FY 1987 APPROPRIATIONS HEARING

BEFORE THE

SENATE APPROPRIATIONS SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT

Statement of George J. Bradley, Jr.
Acting Assistant Secretary
for International Affairs and Energy Emergencies
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman, Members of the Subcommittee:

It is a pleasure to present testimony before this Subcommittee on the FY 1987 budget request for the Office of International Affairs and Energy Emergencies. I shall be discussing only that portion of our request which supports the Office of International Affairs, and the Policy and Management, IE line item, which includes my immediate office and my Management Services administrative support staff.

PROGRAM AUTHORIZATION GOALS

Reliance on the market is the cornerstone of our National Energy Policy Plan (NEPP-IV), which President Reagan submitted to the Congress in October 1983. The goal of that plan is an adequate supply of energy at reasonable costs. Let me reiterate our strategies for achieving that goal.

First, we seek to minimize Federal Government intervention in the energy markets, recognizing our responsibility for health, safety and environmental matters. Our second strategy is to promote a balanced and mixed energy system. Together, the goal and strategies provide the framework in which we have developed our international policies.

The overall policy role for International Affairs is established by the Department of Energy Organization Act of 1977 (P.L. 95-91). This Act requires the Department to develop and implement international energy policy consistent with domestic energy and U.S. foreign policy and to provide independent technical advice to the President on international energy-related matters. In accordance with the National Energy Policy Plan, our program is focussing on the international dimensions of energy supply, energy security, and emergency preparedness. Our primary international energy goals are to reinforce the international nuclear nonproliferation regime; to advise on policies to remove impediments that hinder international energy trade markets; to improve U.S. accessibility in world energy markets, primarily nuclear, coal, oil and gas; to help shape policies that reduce U.S. vulnerability to energy supply disruptions; and to encourage and facilitate increased international collaboration in energy research and development (R&D) to increase the efficiency and productivity of the R&D investment in the technology options available for long-term energy security.

A major initiative related to reinforcing our energy security is the Department's initiative in enhanced collaboration in international research and development. In an era of declining financial support for energy R&D, enhanced collaboration offers an opportunity to maintain momentum of priority research activities. It emphasizes early consultation at the planning and project development stage of high priority energy R&D programs, which helps facilitate substantive collaboration. It also promises improved economic efficiency and an accelerated pace of technological development over and above that which would otherwise be achieved.

The Office of International Affairs (IA) has a unique role in developing the policy and strategy for enhanced collaboration as well as negotiating with senior foreign energy policy officials on the political scope of such new arrangements. This role is significantly different from the technical discussions with foreign partners undertaken at the programmatic level.

An internal task force on international R&D collaboration comprised entirely of technical program office personnel clarified the roles and responsibilities between IA and the program offices. Their findings clearly indicated that IA has policy, administrative, and management information responsibilities that are unique to IA and does not duplicate program office activities. An expansion of those responsibilities was recommended.

An Energy Research Advisory Board (ERAB) study on international R&D collaboration recommends an even stronger role for IA, building upon its unique capabilities and responsibilities. Those who have carefully studied the situation recommend increased funding for policy studies.

The IA studies provide us with the intellectual capital to formulate R&D collaboration policies consistent with overall foreign policy to improve our ability, to understand foreign country energy technology programs within the context of their overall energy policy, to develop strategies that will ensure that our international collaboration activities will provide significant benefits to this country, and to develop negotiating positions for bargaining with specific countries, including possible multiple technology arrangements.

INTERNATIONAL AFFAIRS PROGRAM ORGANIZATION

The work of the International Affairs program is carried out by three organizations reporting to the Deputy Assistant Secretary for International Affairs. The organizations are:

The Office of International Energy Analysis

This office is responsible for providing in-depth analyses of trends in world energy supply, demand, and trade with particular emphasis on policy implications; and for managing and coordinating the international aspects of DOE/U.S. participation in energy security planning and programs. The office also coordinates and implements policies regarding U.S. participation in the International Energy Agency (IEA), and NATO, and monitors the discussion of energy policy issues within the European Community. In addition, the office coordinates bilateral exchanges of views on national energy policy goals and objectives at the technical and Ministerial levels with other countries.

The Office of International Research and Development Policy

This office is responsible for coordinating DOE participation in international energy research and development collaboration activities; coordinating and implementing policies and activities regarding bilateral and multilateral scientific and technological collaboration; and developing policies for related technology trade issues. The office also emphasizes the development of priorities for DOE international R&D efforts, negotiates umbrella agreements and provides expertise for specific R&D program negotiations.

The Office of Nuclear Nonproliferation Policy

This office is responsible, in coordination with the Department of State, for developing and implementing U.S. nuclear nonproliferation policies. Duties include implementing the statutory responsibilities for "subsequent arrangements" under the Nuclear Non-Proliferation Act, supporting the Department of State in the negotiation (and renegotiation) of Agreements for Civilian Nuclear Cooperation, and coordinating DOE's positions on, and financial support of, the International Atomic Energy Agency's (IAEA) programs. The work of this office is closely coordinated with the Office of International Security Affairs in the Department's Office of Defense Programs.

FY 1987 BUDGET REQUEST

The FY 1987 budget request for International Affairs is $5,080,000, an increase of approximately $1,141,000 from 1986. At this level, 51 full-time equivalents (FTEs) are funded, the same as in FY 1986. Requested funding shown below under Program Direction provides for the salaries, benefits, and travel for International Affairs' employees. Also, funds are requested to conduct International Policy Studies. The budget summary is provided in the following:

($ In Thousands)

	FY 1986 Appropriation	FY 1987 Request
International Policy Studies	$ 963	$1,700
Program Direction	$2,976	$3,380
Total IA Operating Expense	$3,939	$5,080

The FY 1987 budget request for International Policy Studies is $1,700,000, an increase of $737,000 from 1986. This requested increase in funding is targeted to contribute to the achievement of the Administration's goal of enhancement of the energy security of the U.S. and its allies by increasing the level of international collaboration in energy R&D and thereby increasing the effectiveness of DOE's R&D investments.

Funds will be used to provide technical and analytical support for international R&D coordination and facilitation; provide analyses of recent successful international cooperation activities; gather information on foreign energy R&D programs and opportunities for future joint energy-related projects; develope a process for early joint planning on a program level, leading ultimately to collaborative activities; focus on multilateral R&D cooperation opportunities under the Committee on Research and Development of the International Energy Agency (IEA), the Nuclear Energy Agency (NEA), and the International Atomic Energy Agency

(IAEA) organizational umbrellas; and establish management information systems to monitor DOE foreign travel, foreign visits and assignments to the U.S. and status of agreements, negotiations and discussions for R&D collaboration.

In the area of international energy analysis, funds will be used to study such areas as energy trends in China and the Pacific Basin; changes in the international oil market structure and energy trade policies; and the utilization of natural gas resources in developing countries.

In the nuclear nonproliferation area, funds will be used for follow-on support for the 1985 Nuclear Non-Proliferation Treaty Review Conference, and for other nuclear nonproliferation issues.

FY 85/FY 86 ACCOMPLISHMENTS

The following are among the major accomplishments of the Office of International Affairs:

- Represented the United States at the International Energy Agency (IEA) in achieving an agreement by IEA Ministers on a common approach toward such issues as gas security and oil product imports.

- Negotiated, in conjunction with the Department of State, the successful conclusion of Agreements for Cooperation for Civil Uses of Atomic Energy with China and Finland that will allow the export of U.S. material, equipment components and U.S. reactor technology.

- Negotiated with foreign governments the establishment of new administrative arrangements required under Agreements for Nuclear Cooperation and initiated new procedures.

- Approved more than 150 "subsequent arrangements" for the transfer of nuclear material while improving the control mechanism.

- Continued progress on the renegotiation of Agreements for Nuclear Cooperation with Japan and EURATOM as directed by the 1978 Nuclear Nonproliferation Act (NNPA).

- In cooperation with the Department of Commerce, laid the groundwork for the President's decision on June 14, 1985 to remove restrictions on crude oil exports to Canada. This action was taken in response to a similar decision by Canada to deregulate crude exports to the U.S.

- Developed the policy framework and rationale for removing restrictions on the export of Alaskan Cook Inlet crude oil to the Far East. This action could involve the export of up to 30,000 barrels per day of crude.

- Provided policy and technical support throughout the Government on international gas issues, including the Spanish proposal for a natural gas pipeline from Africa to Europe and development of Western European gas supplies.

- Provided protocol support for the Secretary of Energy and other senior DOE management for visits by foreign energy officials and visits abroad by U.S. officials.

- Devised a strategy to seek to achieve optimal use of energy R&D resources here and abroad. A process of international collaboration was promoted and discussed among certain key countries. Under this process, interested countries would share and compare their program plans in various technical areas of energy R&D while they are still being developed, and adjust them accordingly to take full advantage of each other's capabilities. These recommendations encourage early consultation in the design of program plans, as well as periodic monitoring of progress in collaborative energy R&D at the political level.

- Managed and administered over 130 cooperative energy R&D technical exchange agreements and other commitments, covering more than 260 projects, with foreign nationals and international organizations including the IEA, the Nuclear Energy Agency (NEA), and the International Atomic Energy Agency (IAEA).

- Drafted and negotiated 48 new technical exchange agreements and 28 extensions of existing technical exchange agreements. A total of 14 foreign countries were involved. Technical fields include nuclear energy, radioactive waste management, enhanced oil recovery, natural gas, geothermal, solar, nuclear physics and coal.

FY 87-89 OBJECTIVES

- Promote and coordinate expanded international collaboration in energy research and development by DOE with other countries in order to maintain scientific progress and optimize the utilization of available scientific resources.

- Secure support for enhanced international R&D collaboration outside the Department by briefing other Executive Agencies and Congressional staffs, committees and offices on the objectives to be achieved and the policy rationale.

- Promote a technical base for the implementation of a Western policy framework to encourage the development of alternatives to Soviet Gas, including ensuring and monitoring our energy commitment to the IEA and implementing specific gas emergency measures.

- Promote the free market in bilateral and multilateral energy relations through, for example, the removal of trade barriers, as the best way to create an environment that will best ensure adequate supplies at reasonable prices.

- Analyze political, economic and energy developments and trends in international markets in order to identify emerging issues which will effect U.S. international energy security interests.

- Promote enhanced cooperation and a more intensive energy policy dialogue with key Asia-Pacific countries in order to strengthen the energy security of this region and prospects for greater U.S. energy exports.

- Continue the historical commitment to maintain and strengthen the international nonproliferation regime. International Affairs considers nuclear nonproliferation one of its primary statutory responsibilities and will continue to exert its best efforts to assure protection against the spread of sensitive nuclear technologies.

- Continue support of U.S. efforts to enhance the viability of the Nuclear Nonproliferation Treaty through increased coordination with other agencies in providing technical assistance to other countries.

- Improve and enhance assistance to the IAEA in fields of technical cooperation with the Agency and in providing focused assistance to selected countries deemed to be of special importance for implementing the U.S. program.

Accomplishment of our objectives will: provide a sound analytical basis on which to conduct our energy relations with both oil producing and consuming nations; establish and maintain a dialogue with other countries on important global energy matters; enchance U.S. international energy research and development collaborative efforts; help reduce the risks of nuclear weapons proliferation while expanding the markets for the peaceful applications of nuclear energy; lessen U.S. vulnerability to energy supply disruptions; and provide accurate and reliable advice and support to the Secretary and other energy policymakers.

POLICY AND MANAGEMENT - IE

Along with the request for International Affairs is the funding for Policy and Management - IE. This includes salaries and expenses for the immediate Office of the Assistant Secretary for International Affairs and Energy Emergencies and the Management Services staff which performs administrative support functions for the IE organization. The FY 1987 request of $710,000 provides for 12 full-time equivalents (FTEs). Funds requested are for salaries, benefits and travel as well as approximately $100,000 for contractual support.

This concludes my statement. I will be happy to answer any questions.

Thank you.

WEDNESDAY, MARCH 19, 1986.

POWER MARKETING ADMINISTRATIONS

WITNESSES

DONNA R. FITZPATRICK, ASSISTANT SECRETARY, CONSERVATION AND RENEWABLE ENERGY

ROBERT J. CROSS, ADMINISTRATOR, ALASKA POWER ADMINISTRATION

PETER T. JOHNSON, ADMINISTRATOR, BONNEVILLE POWER ADMINISTRATION

HARRY C. GEISINGER, ADMINISTRATOR, SOUTHEASTERN POWER ADMINISTRATION

RONALD H. WILKERSON, ADMINISTRATOR, SOUTHWESTERN POWER ADMINISTRATION

WILLIAM H. CLAGETT, ADMINISTRATOR, WESTERN AREA POWER ADMINISTRATION

Mr. BEVILL. The Committee will come to order.

Secretary Fitzpatrick, we are delighted to have you with us. The Chair will recognize you and you may proceed as you wish.

Miss FITZPATRICK. Thank you, Mr. Chairman.

I am very pleased to be here with the Administrators of the five public Power Marketing Administrations. Let me introduce my colleagues.

Starting at my left is Mr. Robert Cross of the Alaska Power Administration, Mr. Peter Johnson of the Bonneville Power Administration, Mr. Harry Geisinger of Southeastern, Mr. Ronald Wilkerson of Southwestern, and Mr. Bill Clagett of the Western Area Power Administration.

Mr. BEVILL. We are glad to have each of you with us.

OPENING STATEMENT OF DONNA R. FITZPATRICK

Miss FITZPATRICK. Each of these Administrators will have a short presentation on his own budget, and I have a few preliminary remarks I would like to make.

The President's FY 1986 budget request included a specific proposal for the sale of the Alaska Power Administration. We have made progress on that proposal since a year ago.

In May of 1985, the APA and the State of Alaska, Office of Management and Budget entered into an agreement to conduct a study of the issues, that is, to compile a list of the issues which should be addressed in undertaking the proposal for a transfer of the Alaska Power Administration.

The results of their study should be finalized in about a month and, of course, be made available to the Committee. I must emphasize that this is not a resolution of issues. It is not a set of recommendations. It is simply an identification of what has to be considered in any such transfer.

In the 1987 budget, the Department of Energy indicated its plans to expand on this effort and to pursue defederalization of the other four Power Marketing Administrations. We are doing this because utilities are not normally a federal responsibility and we believe that these resources can be better managed with regional authorities.

The Administration will pursue defederalization through an open, competitive process which will include the development of a legislative proposal. Working groups are being established to look at all possible options, and before the transmittal of a defederalization legislative proposal, we will seek the views of all concerned groups and individuals including congressional delegations, State and local officials, public and private power entities, customers, and the financial community.

Funds are included in the budget for the continued operation of all of the Power Marketing Administrations in 1987. It is expected that it will take until about 1991 to complete defederalization.

The FY 1987 budget also proposes to modify legislatively the repayment practices of the five PMAs. Our proposal calls for the PMAs to repay the unpaid balance of the principal for Federal power investments, assuming a useful service life to the facilities of up to 50 years at a level not less than what would be required under a straight line amortization schedule.

Repayments of principal under this proposal, if necessary, could be deferred, but they would be subject then to the same terms and conditions applicable presently to deferred interest payments; that is, that current interest rates would be paid on the portion of amortization deferred because the deferral helped finance current operations.

The proposed changes are intended to protect the interests of the Nation's taxpayers. The impact of this repayment reform is modest compared to the proposal made in last year's budget.

Mr. Chairman, that concludes my statement. Now, I would like to ask the power Administrators to give you their statements.

[The statement of Donna R. Fitzpatrick is included at the end of the hearing record.]

SALE OF POWER MARKETING ADMINISTRATIONS

Mr. **Bevill**. Before you do that, you mention the study being made to determine the possible sale of the PMA's.

Miss **Fitzpatrick**. No, sir. It does not determine whether or not they should be sold. It simply identifies the issues which must be addressed and resolved before a recommendation can be made on whether there should be a sale and what the sale proposal would include.

So it is only an identification of issues study. It has no recommendations.

Mr. **Bevill**. Of course, you are aware that it would require an act of Congress to sell the PMA's.

Miss **Fitzpatrick**. Yes, sir.

Mr. BEVILL. I do not think we need to lose too much time on the study because Congress is not going to let them be sold anyway. I would not spend too much time on that.

We will stand in recess for five or ten minutes.

[Whereupon, a short recess was taken.]

Mr. BEVILL. We will come to order and proceed.

Miss FITZPATRICK. Thank you, Mr. Chairman.

If we can, we will start with Mr. Cross of the Alaska Power Administration.

OPENING STATEMENT OF ROBERT J. CROSS

Mr. CROSS. Thank you, Mr. Chairman.

I will be very brief and just summarize a few points from the testimony, if I may. Our 1987 request to maintain current service levels, financed in part by deferral from 1985 balances, is thoroughly responsible because of the cost experiences of the last two years. I note that our emergency fund established in 1984 still remains available also.

Our programs are progressing in a satisfactory fashion in terms of sales and revenues and operation of our objectives. Our current work includes a program to automate our Eklutna project. We expect to complete it about the end of this year, which will lead to substantial manpower savings before the end of 1987.

There were net billing items that I wanted to mention at this hearing today—the net billing for the cost of nonfederal operators that are at the Snettisham Project. We expect to enter into a similar arrangement with one of our customers at the Eklutna Project when we have completed our automation project. The net billing amounts in 1987 are estimated at about 3.8 percent of revenues.

Secretary Fitzpatrick made a report on the progress on our studied issues involved with the sale of the Alaska Power Administration. We have reported to you on that subject each of the last two or three years. We have just about completed our issues study. We expect to have it available for distribution by about mid-April.

There has been a lot of work put into this, and I do think that based on what we have done that the Alaska sale makes still a great deal of sense and should be considered.

That is all I have, and I certainly would answer questions, sir.

[The statement of Robert J. Cross is included at the end of the hearing record.]

Miss FITZPATRICK. Mr. Johnson from Bonneville.

OPENING STATEMENT OF PETER T. JOHNSON

Mr. JOHNSON. Thank you.

Mr. Chairman, in the interest of time, I, too, will summarize and hit some of the highlights of our testimony which is submitted for the record in more detail.

As I look back five years, it was significantly at the encouragement of this Committee that Bonneville get its fiscal house in order. We had a history of failing to make scheduled Treasury payments.

It took two major thrusts. One was to get costs under control, and that included, of course, looking very critically at the Washington Public Power Supply System and the rate of expenditure in connection with those nuclear projects.

But it also required a hard look at rates. We took that hard look and we raised wholesale rates some 500 percent since 1979. A consequence of this is that we have achieved fiscal stability. Beginning in 1984, we made all of our payments to the United States Treasury including, of course, deferred interest from previous years. Our 1984 Treasury payment amounted to almost $650 million. In 1985, the fiscal year just concluded, we paid $686 million, all of the payments that were planned to be paid to the United States Treasury.

At the present time, we face a very dynamic future. One would believe being a hydro generator we are not affected by what is happening in the gas and oil markets. That is quite to the contrary. Some 25 percent of Bonneville power is sold into California and is very directly affected by the price of the gas and oil in those markets. We have to take that into account.

Companies which represent some 25 percent of Bonneville's load continue to face difficulties in world markets because of the very low prices of aluminum ingot.

In spite of the possibility of revenue underruns on non-firm sales because of these very low gas and oil prices, we felt that because of our ability to continue to hold costs under control, we will be able to make our 1986 Treasury payments which are estimated at $670 million. That will make the third year in a row that we have met all of our obligations to the United States Government.

I would say at this time we have two major objectives. One is to continue in our commitment to honor all of our Treasury payments. The second is that in the volatile market that I have described only very generally, that we continue to provide rate stability and predictability to help revitalize the economy of the Pacific Northwest that remains behind the life of the United States economic recovery.

That concludes my comments at this time and I will be happy to answer questions you may have. Thank you.

[The statement of Peter T. Johnson is included at the end of the hearing record.]

Miss FITZPATRICK. Mr. Geisinger of Southeastern Power Administration.

OPENING STATEMENT OF HARRY C. GEISINGER

Mr. GEISINGER. Mr. Chairman, if I may, I would like to submit my statement for the record and summarize very briefly.

Mr. BEVILL. Without any objection each of your statements will be made a part of the record and you may summarize as you wish.

Mr. GEISINGER. Thank you, Mr. Chairman.

Mr. Chairman and members of the Committee it is a pleasure to once again appear before this Committee to discuss Southeastern's budget for fiscal year 1987. This is my fifth appearance before the Committee and SEPA has progressed substantially in the past four and a half years.

Since I last appeared before the Committee, Southeastern has made significant progress in implementing the new power marketing policies. Contract negotiations just completed in the South Carolina Public Service Authority area, Duke Power Company area, and the South Carolina Electric and Gas and the preference agencies in those service areas added 26 new preference customers thus, completing the implementation of the Georgia-Alabama Power Marketing Policy.

The final power marketing policy for the two-project Kerr-Philpott System has been completed and issued. Negotiations are currently in progress with Appalachian Power Company, Virginia Power, Carolina Power and Light Company and the preference entities within the service areas to carry out the policy. These negotiations are expected to add another 48 new preference customers to those that we are now serving.

SEPA presently markets power from 22 multipurpose projects to 248 power purchasers serving approximately 400 preference customers. Estimated power revenues for FY 1987 are $130 million, reflecting the sale of 3,092 megawatts of installed capacity with 7.4 billion kilowatt hours of energy.

SEPA's repayment status is good. From inception in 1950 to September 30th, 1985, operating revenues available for repayment totalled $1.2 billion. These revenues were allocated to repayment of $482 million to operating expenses, $440 million to interest expenses, and $310 million to capital investment in electric plants.

By the end of FY 1985 SEPA's total capital investment was $1.3 billion less the amount repaid, leaving a balance of $992 million to be repaid.

The funding level of $21.7 million is requested in the President's 1987 budget to allow SEPA to carry out its mission. Of this request, $2 million is for system operation and maintenance activities. The major portion of the budget request, $19.7 million, is requested for the purchase power and wheeling activity.

No increase in the manpower level of 40 full-time equivalents is requested in the 1987 budget, although significant increased workloads will occur.

Mr. Chairman, this concludes my statement. If members of the Committee have any questions, I will be happy to answer them.

[The statement of Harry C. Geisinger is included at the end of the hearing record.]

Miss FITZPATRICK. Mr. Wilkerson of Southwestern Power Administration.

OPENING STATEMENT OF RONALD H. WILKERSON

Mr. WILKERSON. Mr. Chairman, members of the Committee.

This is my second opportunity to testify before your Committee and I am really pleased to be here again. My prepared statement has been submitted for the record, and I will just summarize it.

Mr. BEVILL. It will be made part of the record.

Mr. WILKERSON. Thank you.

Southwestern Power Administration's proposed budget for fiscal year 1987 is $38.6 million. This is about 1.6 percent greater than the budget for the previous year, but our request for appropriations is substantially less at $25.3 million. This large difference between the total budget and the request for appropriations is because of an inordinant amount of carryover from fiscal year 1985.

We had exceptional rainfall in that year. We did a pretty good job of managing the resource and so we did have an extra large carryover.

The program that we are proposing for fiscal year 1987 contains no new starts. For the second year in a row Southwestern Power Administration is fortunate enough to have set records in the total revenue received and also in the total amount of repayment on long-term debt.

We expected a total revenue of $98.6 million in fiscal year 1985, and we received in excess of $120 million. This, again, was due to good rainfall and good resource management.

We applied $39.7 million in fiscal year 1985 to repayment of the principal on long-term debt. This was more than double the amount that we anticipated to apply.

Our cumulative debt repayment now stands at $102 million, about 12 percent of our repayable investment of $839 million.

We are continuing at Southwestern Power Administration our efforts to reduce the amount of appropriations that we need for purchase power. We are doing this in two ways. First of all, our existing power sales contracts, as they expire, are being replaced with contracts which give us less of a commitment to deliver energy with the capacity we sell.

Secondly, we are making arrangements for certain customers to pay suppliers directly for energy that has been previously purchased by Southwestern Power Administration for them on a reimbursible basis.

In the absence of these two successful efforts thus far, we would have been requesting appropriations this year $15 million greater than we are.

Southwestern Power Administration has been actively cooperating and facilitating the non-federal financing of additional hydroelectric development in our particular part of the region.

These projects that we are facilitating must be both economically feasible and environmentally acceptable. One such project, the Town Bluff in eastern Texas, was placed under contract during 1985. Several others are in various steps of discussion, negotiation, and development including the W.D. Mayo project in Oklahoma being proposed by the Cherokee Nation of Oklahoma.

We are also beginning to use a cost sharing approach to financing needed transmission additions. Under this arrangement, the costs for these additions will be allocated to those who benefit in proportion to the benefits that are anticipated, while recognizing Southwestern Power Administration's continuing obligation to make good investments on the main transmission system that will affect system reliability.

That completes my summary, Mr. Chairman, and I will be pleased to answer questions later.

[The statement of Ronald H. Wilkerson is included at the end of the hearing record.]

Miss **Fitzpatrick**. Lastly is Mr. Bill Clagett from Western Area Power Administration.

OPENING STATEMENT OF WILLIAM H. CLAGETT

Mr. CLAGETT. Mr. Chairman, it is my pleasure to be here again to represent the Western Area Power Administration. I have just a few items I will summarize. The first one is the California-Oregon Transmission Project which has been of interest to this Committee for the last couple of years. A Project Development Agreement has been signed by all the participants in that effort. It is a $27 million agreement where the various participants, other than Western, pay for the engineering and environmental work necessary to determine if construction should proceed. One of the features of that agreement we appreciated is it means we will be reimbursed for the expenses we have already incurred for our efforts to get that project under way.

The next item I have is our purchase power and wheeling program. I am pleased to report that we have initiated a procedure that we have talked to this subcommittee about for the last couple of years which we call bill crediting. To date, we have bill credited about $16 million worth of power. It is a three-party arrangement, and we expect to bill credit about $50 million this year, which means $50 million less appropriations that we need for our purchase power account. The Central Valley Project, CVP, continues to drive financial requirements for the purchase power and wheeling budget, and we have had some significant increases in the last year. Out of the $205 million that we requested in FY 1987 for purchase power and wheeling, excluding the revolving fund, $181 million is for the CVP.

The next item is a transmission line in western Colorado that is progressing nicely that we are building jointly with Colorado Ute, a co-op, and with the Public Service Company of Colorado. That line was divided into five sections; two of those sections have been energized. One is under construction and two more sections are expected to be contracted for in the next two or three months.

That project is within the budgeted costs of four years ago because of the employment situation in the construction industry in Colorado and nearby states. We have only had to make one adjustment to the project, and that is the addition of some phase-shifting transformers to assure full utilization of the facility.

I mentioned the purchase power and wheeling program, which is where a big part of our increase is for fiscal 1987. The construction program and the O&M program has pretty well stabilized. It is characterized by 16,000 miles of transmission line, of which approximately 8,000 miles are wood pole lines. Of those 8,000 miles, two-thirds of them are 30 years old or older. So there is a constant process of replacing structures or replacing whole segments of line. Before we replace those lines, we always coordinate with the other utilities in the area to make sure that whatever goes in meets the needs of various utilities.

The last item I have is on rates and repayment. This last year we paid $258 million towards repayment of our outstanding debt. That represents about ten percent of the outstanding investment, and like the other PMAs, it is primarily because of a fantastic water year. We sold a lot more energy because of extra water.

We do not expect any major rate increases in the near future. We will have two or three minor rate increases that we are working on now. At this point in time, we have no actions before FERC.

Mr. Chairman, that summarizes my statement.

[The statement of William H. Clagett is included at the end of the hearing record.]

REPAYMENT REFORM

Mr. **Bevill**. Mr. Clagett, you mentioned that you do not anticipate any rate increases?

Mr. **Clagett**. Excuse me, sir. No significant rate increases.

Mr. **Bevill**. All right. Significant rate increases.

Mr. **Clagett**. There are a couple of them——

Mr. **Bevill**. But now the administration, I understand, is proposing to increase the rates and is advocating the sale of the utility. What is the status of that? Has any legislation been introduced to proceed on either one of those?

Mr. **Clagett**. Not to date, no.

Mr. **Bevill**. Are you in the process of drawing up any legislation to do that?

Mr. **Clagett**. Legislation for repayment is in the final stages being drafted.

Mr. **Bevill**. All right.

Miss **Fitzpatrick**. There is legislation being drafted, Mr. Chairman, to propose the repayment reform.

Mr. **Bevill**. All right. And do you have any estimate of what the impact would be on the power marketing administrations?

Miss **Fitzpatrick**. Yes, we have projected what the impact would be on the wholesale electric rates. For the Western Area Power Administration we would expect no impact. The impact on the other administrations would range from 6 to 13.5 percent on wholesale rates. That is attenuated as you move to retail and is further attenuated for each actual retail customer, depending on how much of this power comes from a Federal source.

Mr. **Bevill**. So it would increase the rates for everybody except Mr. Clagett?

Mr. **Clagett**. Excuse me. For us in the first year. After first year implementation, there would be an increase for us also.

Miss **Fitzpatrick**. That is true.

Mr. **Bevill**. That would increase.

Mr. **Clagett**. Yes.

Mr. **Bevill**. That would be a significant increase in the second year.

Miss **Fitzpatrick**. Western Area would still be in pretty good shape because they have been repaying quite well. The difference between the repayment reform levels and what they are already paying would be rather small.

Mr. **Bevill**. You have commented on the impact and there is no legislation pending for any sale.

Miss **Fitzpatrick**. That is true, Mr. Chairman.

SALE OF ALASKA POWER ADMINISTRATION

Mr. **Bevill**. Now, of course, for years we have talked about the sale of the Alaska PMA to the state of Alaska.

Miss FITZPATRICK. To the state or some other purchaser?

Mr. BEVILL. I know Mr. Cross was present when I met with the governor of Alaska. We talked about it.

Mr. CROSS. Yes, sir.

Mr. BEVILL. But at that time we were talking about the state of Alaska. The governor and other Cabinet members were very interested in acquiring Power Marketing Administration.

Are they still interested?

Mr. CROSS. Yes, sir, they are still interested, and we also have examined local ownership options as we have gone through a study of issues.

Mr. BEVILL. Do you anticipate proposing legislation authorizing the sale to Alaska or others. Or are you proposing legislation for Alaska only since you have been negotiating with them for years?

Mr. CROSS. Mr. Chairman, I am not sure what the legislation will look like. I suspect the legislation will have a proposal for sale to a specific party, and I suspect it will either be to the State of Alaska or to local ownership. I suspect that is what the proposal will be.

Mr. BEVILL. To your knowledge, it has not been introduced?

Mr. CROSS. No, sir; there has been none introduced.

Mr. BEVILL. All right.

REPAYMENT REFORM

With reference to the Administration's legislative proposals for the rate revisions, I wish each of you would comment on the impact of the legislation requiring a reduction in the period of time allowed to pay off the indebtedness, which, of course, means bigger payments.

Mr. WILKERSON. Mr. Chairman, for Southwestern Power Administration, in Fiscal Year 1987, we anticipate a rate increase in the 10 to 11 percent range, and approximately a 3 percent rate increase in each of the following two years for an overall impact in the three-year period of about 16 to 17 percent.

Mr. BEVILL. In each of three years?

Mr. WILKERSON. No, a total increase over present rates of about 16 to 17 percent, spread over a three-year period.

Mr. BEVILL. All right. Mr. Geisinger?

Mr. GEISINGER. Mr. Chairman, the proposed rate reform package would have an effect on the Southeastern Power Administration to the extent of about 10 percent increase in the wholesale rate. We want to keep in mind that Southeastern Power, as a whole, only supplies about 6 percent of the preference customers' load.

Mr. JOHNSON. In the case of Bonneville Power Administration, the proposed reform would require roughly another $140 million out of the system in Fiscal Year 1987. We calculate that the repayment proposal alone, would result in a rate increase of 6 to 9 percent.

Mr. BEVILL. That is the average, industrial and private?

Mr. JOHNSON. That is only for the priority firm wholesale rate for residential services.

Mr. BEVILL. All right.

Mr. CROSS. Mr. Chairman, our two projects are kept separately for all financial matters. One of the projects would not have an effect. We have already recovered that. The other project would have approximately a 13½ percent increase in 1987.

Mr. BEVILL. You, of course, contemplate introducing legislation to change the rate structure.

Miss FITZPATRICK. Yes, Mr. Chairman, we will do that legislatively. We will propose legislation.

BONNEVILLE POWER ADMINISTRATION

Mr. BEVILL. All right.

Mr. Johnson, I believe this is your fourth or fifth year as head of Bonneville?

Mr. JOHNSON. Yes, sir.

Mr. BEVILL. I think it is commendable what you have accomplished. They were struggling to make the payments to the Treasury when you took over, I believe.

Mr. JOHNSON. We are current in our obligations to the Treasury at this time—amortization requirements and, even though we are suffering a short fall in estimated non-firm revenues this year, again because of cost control, we feel comfortable that we will make our $670 million payment this year which, again, will meet all of our requirements to the Treasury. This will be the third year in a row that we have been successful in meeting those obligations.

Mr. BEVILL. Well, I remember when you took over as head of Bonneville. In my own mind, I gave you about six months. [Laughter.] I think it is commendable what you have done. I did not expect to see you here five years later. [Laughter.]

BPA NUCLEAR PLANT STATUS

Mr. BEVILL. You have a couple of nuclear power plants on standby. What is the status of your review of the possible start of these two power plants?

Mr. JOHNSON. We have just completed the development of a comprehensive resource strategy which projects into the future those resources that the Administrator would require to meet loads placed upon the Agency. Based upon that study and our analysis, we would maintain both Supply System Units 1 and 3 in a state of preservation. And, over the next five years, we see no need to begin a financing in anticipation of a re-start of those two plants.

Our load growth remains very flat. Given the surpluses we presently enjoy, we will maintain those two resources in a state of preservation, at least for the next five years.

Mr. BEVILL. Do you feel you will need them in the nineties?

Mr. JOHNSON. Very possibly. Given projected load growth, and as long as they remain competitive against other alternatives, including conservation. It is very possible that they will be the next least costly resource that the Administrator would then seek to meet the loads on the Agency.

Mr. BEVILL. The Chair recognizes Mr. Myers.

Mr. MYERS. Thank you, Mr Chairman.

Once again, I was listening to your testimony. I was thinking, "What am I doing on this Committee?"

Just about nothing that comes before this Committee affects the Congressional District I represent. The Chairman says there will not be a privatization of the Power Marketing Administrations. And I think, looking over the make-up of the Congress, the powerful members you have who live in the areas you serve, this is probably right. With the exception of Alaska, I think he is right on this. I think you make a strong case for the sale of Alaska since you have been studying that for a number of years. Alaska is financially much better off than the United States Government. Have they ever thought of taking us over? [Laughter.]

BPA REPAYMENT PROGRESS

Mr. **Myers**. Well, you have all done a fine job. Of course, you were created to deliver and distribute electric power in your area. You have all had financial trouble and, most particularly, of course, Bonneville. As the Chairman just said, they were in bad shape when you took over. I don't know why you even wanted the job. It was certainly a challenge. All of us shared the views of the Chairman and wish you well. You have done a great job. You all have.

Bonneville has been somewhat the problem child all along the way. First the reduction in the aluminum industry; the imports of electric power from Canada; the fish and wildlife litigation problems—you had a host of problems not even considering the financial problems.

Secretary Fitzpatrick, you have carried these people through. With their help and yours, you have worked together and done a very fine job.

What is the secret? Is it good management? I know you have had some rate increases but that alone would not do it all. What about the aluminum industry? Has that returned somewhat?

Mr. **Johnson**. You were wondering what purpose you might serve on this Committee, not having constituents. I can assure you that you were heard five years ago when you admonished this Administrator that I had better get my house in order. So, in that sense, you have had a very important influence on the Power Marketing Administrations in the country. But you failed to mention, perhaps, the biggest problem we faced, and that was our commitment to nuclear in our supply system.

Mr. **Myers**. I was going to discuss that next.

Since you have discussed it, go ahead.

Mr. **Johnson**. I have repressed it, but it is under control.

Mr. **Myers**. I thought you wanted to forget that.

Mr. **Johnson**. It comes up in nightmares.

Things are in much better shape. You asked how did we bring this about, and I am going to seize this opportunity to explain. The Agency has historically been a very professional organization and has done a number of things in meeting the needs of the Pacific Northwest in efficient ways. It has been my privilege to perhaps participate in the revitalization of that commitment. The professional organization that Bonneville is just got its shoulder to the wheel. We committed ourselves to achieving efficiency, which is one of the promises of the Reagan Administration. We sought to bring to Government the most efficient management practices that we could. We established that combination and committed ourselves to it, and it is largely because of this that you are seeing the efficiencies that you are at the present time. These efficiencies are dependable and predictable. They are not transitory. We feel very good about the future of the Bonneville Power Administration.

ALUMINUM INDUSTRY STATUS

Mr. MYERS. Have there been any other industries move out of the area, thereby reducing your power demands; or are there likely to be any moving out in the future?

Mr. JOHNSON. Congressman Myers, the aluminum industry was attracted to the Pacific Northwest because of the very low cost of power. That is the most troubled single industry, and, certainly, the largest direct load served by Bonneville. The world price of aluminum remains very low, even though it has increased. I understand it is up to about 58 or 59 cents. That still remains below the variable cost of production. Thinking it was in our best interests, we have attempted to assist those customers by offering incentive discounts. We have done this now for three years, and I think that has had a big influence on our ability to meet the Treasury payments and to maintain that market.

We are presently engaged pursuing the development of a variable rate to assist them in meeting some of the difficulties they face in the world market.

We think this is a prudent utility call, based on sound business principles. The continued viability of the aluminum industry in the Pacific Northwest remains somewhat in question. I am not sure we are going to be able to maintain them. If we do lose them there will be more unabsorbed costs that will have to be laid onto the residential rate payer, further exacerbating past rate increases.

I have my fingers crossed that we have the matter under control. We are addressing it in a sound and businesslike way, and we run a good chance of not losing the aluminum load in the Pacific Northwest.

Mr. MYERS. Of course, all of you do not have the aluminum industry, but are you losing any industries in your areas because of your increased rates? Canada is a good friend of ours, but we are all in competition for the same business. If they are able, for some reason to produce energy cheaper, and entice and lure away our industry, we need to do something about it. That is why I asked the question.

COMPETITION IN ELECTRIC RATES

Next, you did mention the rate increases. Your rates have increased as much as 500 percent. How does that compare to other suppliers in your areas? Are you competitive with the rates of other power companies?

Miss FITZPATRICK. I think, generally, Mr. Myers, the public power rates are competitive or below what private utilities are charging. Certainly on an average basis for the Nation, they are below.

Mr. MYERS. I hope that is true.

Bob, do you have much competition in Alaska?

Mr. CROSS. In one of the market areas, we are the dominant supplier. Our rates are substantially below what the competition would be. The other substantial resource is natural gas.

Mr. MYERS. How about Bonneville?

Mr. JOHNSON. Yes, we are competitive within the region. But, if we look at the entire country, we still retain retail rates in the Northwest at roughly half of the rest of the country. We are a hydro-based system with virtually no fuel costs. But within the region we have utilities who have lower rates than we do; lower retail rates. And, of course, immediately to our North, we have BCH, British Columbia Hydro, which likewise has very competitive rates. And at the present time they do not have any difficulty selling their power at published rates into Congressman Fazio's State of California.

Mr. MYERS. I am sure he is going to have some questions about the intertie.

How about Southeastern, what about your competitive rates?

Mr. GEISINGER. Mr. Myers, we are very competitive. Our rates are anywhere from one-fifth to one-half of what the investor utility rates are. So we probably have the lowest power rates, wholesale rates in the Southeastern United States.

Mr. MYERS. Even compared to TVA?

Mr. GEISINGER. We sell 482 megawatts to TVA, and I believe they are cheaper than they can produce them.

Mr. MYERS. You are selling it cheaper to them than they can produce it?

Mr. GEISINGER. I believe, taking their whole system into consideration.

Mr. MYERS. How about Southwestern?

Mr. WILKERSON. In Southwestern Power Administration, I think on the inter-connected part of our system, where we can deliver it directly from our transmission system, that we are quite competitive. In other words, slightly below the investor-owned utility rates. But, when we deliver to outlying customers, like Kansas and Louisiana, where the customer has to bear the cost of moving that Federal power over sometimes several intermediate systems, and paying the wheeling for that, the costs are sometimes higher than what they could buy locally from non-federal sources. And, with the change in the oil prices currently, which is probably a short-term thing, that part of the country down there will be very competitive with us for electricity prices.

Mr. MYERS. I will ask you a question about that in a moment.

How about Western? Are you competitive also?

Mr. CLAGETT. We are, generally, very competitive, and substantially below other sources. We have two projects, however, that deserve mention because they are in a different category. One is the Central Valley Project. When the last step of the rate increase goes in, the rate will be just under 40 mills a kilowatt hour. With current oil prices, that does not represent a bargain.

Another project, the so-called "Fryingpan Arkansas Project" in Colorado, which is only a couple hundred megawatts, is also not a bargain. If we were to charge what it costs to recover the costs of that project—it is a new project that came in about a year ago—we would not be able to sell the power. The revenues would be zero. This is similar to some of the problems of many years ago when hydropower first began. It was frequently more expensive because it was so capital-intensive. We are trying to face that right now by incorporating that project into the Western Division of the Pick-Sloan Missouri Basin Program so that that 200 megawatts gets diluted into Pick-Sloan Projects. That high cost project gets mixed with some 9.5 mill power, and we can recover the costs.

REPAYMENT REFORM

Mr. MYERS. Secretary Fitzpatrick, are you concerned that rate reform will destroy the competitive rates that we have now? Do you think the increase if allowed, will make it more difficult to compete?

Miss FITZPATRICK. Certainly the increase does eat away a little of your competitive edge. However, in most cases, that edge is fairly substantial. I do not think we are going to be pricing ourselves out of the market.

Mr. MYERS. Are private utilities asking for rate increases around the country?

Miss FITZPATRICK. Certainly.

Mr. MYERS. So they will be going up also?

Miss FITZPATRICK. Yes.

Mr. MYERS. I know we get a lot of mail, all of us do, complaining about the utility rates, both gas and electric.

Miss FITZPATRICK. Historically, Mr. Myers, many years ago Federal power was not a particularly good buy in many areas. But, in the last 15 or 20 years, we have seen utility rates generally rise, sometimes very rapidly, and I think we have seen this turnaround and Federal power is now generally lower than privately owned utilities.

POWER CONTRACTS

Mr. MYERS. In your contracts to purchase power, are any of your contracts "take or pay"?

Mr. CLAGETT. Yes.

Mr. CROSS. Yes.

Miss FITZPATRICK. You are speaking about the Administration having to buy power?

Mr. MYERS. Buy power.

Miss FITZPATRICK. On a take or pay?

Mr. MYERS. Yes, and next, do power companies have to pay you whether or not they take the power?

Mr. CROSS. We have no purchase arrangements.

Mr. JOHNSON. The take or pay concept would apply to power we purchase from the single operating nuclear project at the Supply System. We are obligated to pay all debt service on that facility as well as on the reserve plants. So, certainly, we pay those bills, whether or not we take the power. At the present time we are using the power from Unit 2.

Mr. **Geisinger**. What we have is power that is contracted for by capacity and energy, and I cannot imagine anyone not wanting to take it.

Mr. **Myers**. But you do have "take or pay" contracts?

Mr. **Geisinger**. It never occurred to us as take or pay.

Mr. **Myers**. But you had to pay for a minimum amount of power.

Mr. **Geisinger**. Nobody has ever turned it down.

Mr. **Myers**. But you do have contracts?

Mr. **Geisinger**. Yes.

Mr. **Wilkerson**. In Southwestern, on the purchase side, we do not have any take or pay arrangements; but on the sale side, yes, there are take or pay arrangements.

Mr. **Myers**. Pretty good deal.

Mr. **Clagett**. Purchase and sale.

CONSTRUCTION WORK IN PROGRESS

Mr. **Myers**. With regard to your construction, can you crank construction work in progress into your rates? Can you start collecting before you start delivering?

Mr. **Cross**. The answer is yes, in a limited fashion. We actually do show costs of additions.

Mr. **Myers**. I guess all of you allow construction work in progress.

I have some other questions for the record. I realize I have used my five minutes.

Congratulations on the good job you are all doing. I take it you are all going to continue to return to Government the principal and interest at the rate you are doing now. You do not anticipate that you cannot continue to make the payments that you have been making. That certainly makes our job easier here. Under today's stringent budget climate, at least we are going to have the funding paid back and make a good return for the investment. Other committees do not have to worry about the return on the investment. They do not have to have a benefit to cost ratio. About every project that we appropriate here, we have to have a positive return. It makes our job much easier that you are doing well.

Thank you. Thank you, Mr. Chairman.

Mr. **Bevill**. The Chair recognizes Mr. Fazio.

BONNEVILLE POWER SALES TO CALIFORNIA

Mr. **Fazio**. Thank you, Mr. Chairman. As Mr. Myers accurately predicted, I do have some questions. There is some self-interest here, I must admit, in certain areas. I have another line of questioning that is a little bit broader. Mr. Johnson, I have to mention that you are a good Administrator and you are an even better witness. I think you have put forth the best possible case for Bonneville. It might help in responding to Mr. Myers' question on how you have done at Bonneville if I were simply to make note of the fact that since 1980, California's non-firm costs for power climbed from $130 million to $400 million. That has not done any harm to Bonneville at all, has it?

Mr. JOHNSON. No.

Mr. FAZIO. California has been helping with some of your burdens. And we are a little concerned because the golden goose syndrome may be coming into play. I think that is particularly important for us to note in light of our plans to upgrade and develop the new interties that this Committee has had a crucial role in bringing about. The FERC role here is important for us to focus on. Most recently the rate we talked about was 23½ mills. That is up from 3 or 4 mills in the 1980 period. That has reached the point of being counter-productive in some ways because, as you have indicated earlier, we have other factors in the marketplace that are making that power uneconomic for potential purchasers in California.

We have had some good hydro years, as Mr. Clagett has mentioned. And we have also had the oil price decline, which has made it possible to buy power elsewhere a good deal cheaper. Even in the case of Southern California Edison, they have been able to get coal from the Four Corners facility at 7 mills and you have been asking them to pay 8.2 mills. So they have been buying a heck of a lot less than might originally have been planned.

I am concerned that you are making the investments, that we are asking California public and private utilities to make, uneconomic if they cannot get contracts that provide power that is very competitive over the next 15, 20 or 25 years. These have to be long-term in order to pay off the cost of amortizing these interties. Obviously, we have to be somewhat flexible because we cannot predict what the oil prices will be or what kind of weather we are going to have. We do have a serious problem with the desire that we see of the Bonneville ratepayers to benefit, while we pay the cost of conservation initiatives. We pay for your efforts to retain jobs, as Mr. Myers said, in the aluminum industry. We are sensitive to all of your problems and we want to help, but there is a point where I think it becomes impossible for us to be of assistance.

I have a couple of questions along these lines.

First of all, you are talking about having a range, of prices that you charge, 7 to 22 mills, as I understand it. I do not know what FERC's role would be under these circumstances. The impression that I get is that you would be asking for a lot of discretion to charge whatever the traffic would bear within these ranges. Is that correct? How would it work?

Mr. JOHNSON. Substantially that way, yes, Mr. Fazio. The rapid drop in oil prices has, obviously, been of great benefit to California utilities. It has certainly changed the market for the non-firm energy that we have historically sold to California. I think it is our responsibility to make sure we are competitive against alternatives such as natural gas. So we have gone to FERC and asked them to give the Administrator the authority to react to market realities and deal with the alternatives available to California utilities. This gas price adjustment could be a short-term phenomenon, and obviously we do not want to lose market share, even though this is a severe revenue short fall for the Pacific Northwest at this particular time. We do not want to lose market share because we think in the future it is going to be greatly to the advantage of California utilities to be able to avail themselves of this non-firm power from the Northwest.

COST VERSUS MARKET BASED RATES

Mr. FAZIO. Well, what is FERC's role in terms of monitoring what you would like to charge? Obviously, if they give you a range like that, they are pretty much out of the equation. FERC would be saying "You charge whatever the traffic will bear." Obviously, we are a little concerned that we do not have much leaverage under a circumstance like that.

Mr. JOHNSON. In talking to the President of the California Public Utility Commission just yesterday, I told him our reason for going to FERC was to be able to have the flexibility and authority to meet the market in California. The CPUC President had moved quickly to deal with market realities within California because of the drop in the prices of oil and gas, and we want a similar authority in order to deal with that same reality in the pricing of our non-firm energy. He said, "That's exactly where I'm headed. That makes sense to me." And he wants that. In fact, he admonished us earlier in the week in the public forum to make sure that we were aware of what was happening to prices in California so that we could, in fact, react to them in a timely fashion.

Incidentally, Bonneville was the first to drop its prices, I am told by Southern California Edison, to adjust to the realities of the dropping price of gas.

Following us were some of the utilities from the Inland Southwest. We think we have to deal with reality. Under a FERC hearing officer decision, which must be reviewed by the full commission not only were we encouraged, in fact, we were admonished, by that hearing officer to price on a cost basis. In effect, Judge Miller said, "You have also got to be prepared to deal with market reality, to have flexibility to deal with market reality."

Mr. FAZIO. We want you to be flexible, but we are a little concerned about who defines what those realities are. Obviously, we would like a role in that process, and we would like FERC to have some adjudicatory control here.

The problem we have is, for example, when you have a tremendous amount of surplus hydro available, you displace your nuclear plants and your coal plants. You, in effect, use your cheapest power, and then you come along and charge us 23.5 mills at the same time.

In effect, what is happening, is that you get the best of whatever bargain can be cut, and we end up paying the higher rates. In some cases, as you have been finding out, California is not buying anymore.

What we are looking at, and this Committee has invested a good deal of time in this upgrading and new construction of the AC intertie, is that the facility may simply be unable to pay for itself, given the vagaries of the marketplace. We are going to have to have some sort of long-term contracts, some sort of firm understanding as to what will be the limits that can be charged. And, certainly, we think 23½ mills is beyond what makes sense, I guess we are looking for more equity and looking to the future.

What happens when oil prices go back up again? Are you going to immediately increase your rates to whatever rates would be required if we were to buy oil for plants in California?

Mr. Johnson. Recognize that the 23 mill rate is a cost-based rate.

Mr. Fazio. Yes.

Mr. Johnson. We would return to that if the market would bear that rate, but we would not go above that.

Mr. Fazio. If FERC signs off on this range?

Mr. Johnson. When oil prices go back up and 23 mills is the cost-based rate, that is what I have to generate in order to pay my Treasury obligations. So we would go to that point, but we would not go above that unless there was another rate case and on a cost basis, we were able to justify a higher figure.

Mr. Fazio. But your people up there are not going to be paying the real costs. We are going to be paying the current market rates, based on current conditions, and your folks are not. Is that not correct?

Mr. Johnson. This non-firm rate applies to Northwest buyers the same as it does to Southwest buyers at the present time.

Mr. Fazio. There is an important distinction to make. You said we used to buy non-firm power from Pacific Northwest at 3 mills. We were also selling to Pacific Northwest customers at 3 mills. That was the equity in the sharing of benefits between California utilities and the Pacific Northwest. Our rates now are in excess of 20 mills as well. They are at 22.2 mills at this time. So the non-firm rate of 23 mills is a cost-based rate, and is on a rough parity with the firm power rate in the Pacific Northwest.

I think it is important that we define this as tightly as possible. Obviously, you have some costs that have been incurred by Bonneville that you would rather not carry, but you do. And we are concerned about your focus on "the money you have got to send Miss Fitzpatrick" as well as paying for the remaining nuclear facility, and other investments that have been made, wisely or unwisely. We do not want to be the sole source of support for some of these burdens that have caused your rates to go up regionally. We are prepared to help you with some of that burden, but not all of it.

Mr. Johnson. I appreciate that and, under no circumstances, is any utility customer a sole supporter of the cost increases that have been suffered by the Bonneville Power Administration. As I say, in the Northwest our wholesale rates to public bodies have gone up again, over 500 percent since 1979. With respect to the aluminum companies, they have likewise gone up by 600 percent. What we are trying to do is make a fair allocation of those costs under approved utility practices and rate-setting policies.

Mr. Fazio. Actually, I think it is important for the Committee to realize that the work we have done has made it possible for your region to bear the cost of these heavy burdens, and help the Federal Treasury. We are willing to construct the intertie and upgrads are paid for privately. My final concern is the reduced use of the existing facilities, because rates have been too high.

Is there anything you can do to get those lines carrying full capacity.

Mr. **Johnson**. That is a good question, Mr. Fazio. I think right now the reason the lines are unloaded is not because of Bonneville's pricing as much as it is because of the unbelievably good hydro system that is active in the Northern part of California at this time. There is a surplus of power coming out of the hydro system—

Mr. **Fazio**. We saw the surplus of water a couple of weeks ago and now we see the benefits on the other side.

Mr. **Johnson**. Bonneville has been wrestling with establishing rates since our costs went up. And, in connection with some of our earlier non-firm rates, the FERC hearing officer has admonished the Administrator for not charging enough and that he should charge on an average system cost basis. That is the logic of the 23 mill figure that you have.

I am not using that as an excuse, but, nonetheless, I was scolded by FERC for not charging enough.

CALIFORNIA-OREGON INTERTIE

Mr. **Fazio**. We are well aware and worry a good deal about that kind of a limited perspective.

On WAPA issues, I thought maybe we could clarify whether or not you have authority to help the intertie participants who are struggling with the financing of the right-of-way issues.

Mr. **Clagett**. Yes, we have the authority.

Mr. **Fazio**. Are you prepared to help? Are you going to be helping clear some of the impediments that a Federal agency could clear away readily.

Mr. **Clagett**. We are willing to, yes.

Mr. **Fazio**. If you are asked, you will be willing?

Mr. **Clagett**. Sure.

RATE INCREASES FOR CENTRAL VALLEY PROJECT

Mr. **Fazio**. We talked about rate increases in the Central Valley Project. I think it might be interesting for some people to know that the rates in my utility district have gone up 28 percent in the last year. That is why I think you seem to be ahead of the other Power Marketing Administrations in paying your full costs, as defined by DOE.

Mr. **Clagett**. Well, back in the sixties, when the original intertie was constructed there was a complicated political settlement on what the Federal role would be to meet preference agencies' load growth and total load. The result of that settlement was that the Federal Government is obligated until the year 2004 to purchase the energy that the CVP system does not produce. That deficiency is about 3 billion kilowatt hours every year in average water year. In a good water year, it is a little less than that. Also the cost of purchased power has gone up considerably in the last few years, and that is the principal influence on our rates going up so much.

Mr. **Fazio**. But we had an agreement which required us to bring these up. Is that what you are saying?

Mr. Clagett. We had an agreement that required us to purchase the power to supplement the CVP system, and those purchases have gotten very expensive.

Mr. Fazio. We have had an increase from 16.89 mills in 1983 to 36.16 in 1986, and it is going up again in October to 39.6.

Mr. Clagett. Yes, sir.

Mr. Fazio. Is that the last increase we are going to see for awhile?

Mr. Clagett. Yes, for awhile, unless there are some additional costs for a new project or something that would require that the costs increase further.

Mr. Fazio. Do you have in mind what those might be on the CVP?

Mr. Clagett. I do not have any in mind. I think some other people might.

Mr. Fazio. Well, would you want to put on the record what you think they might be?

Mr. Clagett. The only one I think of offhand is Auburn Dam. It appears to be an expensive project.

PROJECT POWER

Mr. Fazio. I am glad you brought it up.

There is a question related to sending water to San Diego. I know that is of interest to Mr. Miller's Committee and Ron Packard, and others. Apparently, they would use project power. Can you tell us what the difference between project power and what you charge to preference customers?

Mr. Clagett. Project use power is very cheap energy that only reflects some of the costs of the hydro project itself. It does not include, for example, purchase power and wheeling, and transmission costs. I think for that project it is 2½ mills.

Mr. Fazio. Two and a half mills?

Mr. Clagett. Two and a half mills.

Mr. Fazio. This is a Federal burden that, theoretically, the courts would impose on us, because we have taken the Indian's water and the power that they could have generated from it. So the proposal is to provide water and power to them from Northern California in order to save the Federal taxpayers perhaps $100 million. We would use our power at the rate of 2½ mills and our water at very cheap rates.

I just thought I would begin to educate some of us on what is at stake here and what is involved.

REPAYMENT REFORM

I just thought I would finish up. I know we have hit clearly on the question of privatization, but, Donna, can you tell us what we would raise in revenue if we were to impose the bill that you are preparing now—the full cost legislation?

Miss Fitzpatrick. Yes. The repayment reform would result in an FY 1987 increase in payments to the Treasury of $162 million.

Mr. Fazio. Could you allocate those across the table?

Miss Fitzpatrick. Yes, it is about $140 million to Bonneville, or $139 million.

Mr. FAZIO. Indirectly to California, I might add.

Miss FITZPATRICK. One million dollars to Alaska; $13 million in Southeastern; $9 million in Southwestern and nothing in the Western area.

Mr. FAZIO. I am being magnanimous in my opposition here. There is no reason for me to be upset. I think you hear about Bonneville's rates and you understand why we are concerned as we are.

DEFEDERALIZATION REGIONAL IMPACTS

I just wonder, at this point, if we could ask the members of the panel what they think privatization would mean to their region in terms of rate increases. Whether or not they feel their administrations would be sold lock, stock and barrel, or whether they would be pulled apart, and a certain creaming type of activity involved. I would be interested in hearing from various members of the panel. What do you think the future would bring if we were to privatize or defederalize, as Secretary Herrington calls it. I will leave Mr. Cross out on this, because we are ready to throw you in.

[Laughter]

Mr. FAZIO. We appreciate your willingness. We would be happy to hear from the other four. Mr. Clagett?

Mr. CLAGETT. That is a tough question, because what we are embarking on is a long detailed, thorough analysis of what the options and issues might be.

Mr. FAZIO. Perhaps, in answering, tell us what you think this legislation really should emcompass, if it is introduced.

Mr. CLAGETT. I have to emphasize that this is really a complicated issue. If I may indulge.

Mr. FAZIO. Go ahead.

Mr. CLAGETT. We literally have thousands of contracts, and every one of them has to be reviewed to see what happens if a new organization were to take them over. Many of those contracts go beyond the year 2000 for certain power sales, or acquisition of power. Can those be transferred to another entity? If so, what are the options.

There are literally thousands of parcels of land associated with right-of-way. Again, what are the options?

What happens to the procurement actions that we have?

We process, at the Western Area Power Administration, over 100,000 invoices a year. What do you do when you transfer that work to a new organization? The list goes on, that is just a start. What do you do with the personnel system that we now have if we transfer to another organization? What rules and regulations will we use? Are we talking about a full-fledged non-Federal entity? Are we talking about a partial step that would preserve employees' rights? There are a lot of complications.

INTEGRATED POWER SYSTEMS

I hope for one thing, and that is that we keep the system intact. I believe there is a multi-state benefit to an awful lot of people to retain the integrated system that we have. I would have some fairly strong feelings about maintaining those benefits, and not destroying them.

Mr. **Fazio**. What do you think those benefits are.

Mr. **Clagett**. I think the primary benefit for us, as a transmission organization with a hydro resource that has a lot of storage, is the transfer of low cost power from one part of the system to another, which might be 2, 3, or 4 states away. That could be a coal-fired plant, displacing a higher cost oil-fired plant. The other is——

Mr. **Fazio**. So it is cost-efficiency to the whole grid?

Mr. **Clagett**. Yes.

Mr. **Fazio**. The entire power network in the country.

Mr. **Clagett**. It is normally easier to accomplish if you have one organization to deal with, particularly when you have to go two or three states away through several utilities.

The other benefit is the integration. We think we are doing a pretty good job of integrating hydro resources we have with the coal-fired generation in the region, so that coal-fired generation can be operated at night. A very high economic benefit is derived from being able to operate coal-fired generation at night instead of shutting it down. We can do that by integrating our hydro resource with coal-fired generation.

Mr. **Fazio**. I know this is taking time, but I think it is useful for the members to know the down side of this one-time sale may have on the country.

Do you want to talk about that?

Mr. **Wilkerson**. Mr. Fazio, in Southwestern Power Administration, our major system is an integrated system, such as Bill describes, connected together electrically and operated hydraulically on an integrated basis.

We have a small isolated system in Texas which could be sold separate and apart from the integrated without a bad consequence. I also would think it would be unwise to break up the integrated fashion of the network that we have down there.

You asked the question about the rate impact, and I really have no way of putting a figure on it other than making some assumptions. Last year there was a repayment reform proposal which would have refinanced, in essence, our current debt at current interest rates. And, assuming that were done, I think the rate impact on Southwestern would have been something on the order of 78 or 80 percent, something in that range, wholesale rate increase.

So, if you were to divest the Federal assets down there for the amount of unpaid remaining investment, but just refinance that, that is the amount of rate increase you would be looking at. If you were to move up toward a market-based value for the system, of course, it would be in excess of that.

As to potential purchasers, I do not have any. I guess the whole world is out there, although I would certainly think that existing customers of Southwestern Power Administration would have some interest in this as well as some of the investor-owned utilities down in that part of the country.

Mr **Fazio**. Of course, if we refinanced this, it does not do any good in terms of deficit reduction.

Mr. Geisinger, do you want to comment?

Mr. GEISINGER. Mr. Fazio, it has been expressed many times before this Committee that we are, all five of us, very unique. In Southeastern, we have no transmission line, so we have the investor-owned utilities to facilitate the transmission of power.

As to who could possibly be a primary purchaser, we have had expressions from both the investor-owned utilities as well as those who are presently receiving the benefits and that is, in this case, municipalities.

So, of the five of us, we probably would be the easiest since we do not have any properties to sell off in regards to transmission lines, or dispatch centers. But what we sell is capacity and energy.

Mr. FAZIO. Peter?

Mr. JOHNSON. Mr. Fazio, first I would say that I fully support the President in his desire, as well as Congress, to deal effectively with the current deficit. And the first step we have taken, I have already described. We have increased our efficiency and we have met our obligations to the United States Treasury. So that is considered our first obligation.

I am not going to speculate on an outcome because, one, I do not know, and, two, it would be reckless on my part at this time.

At the present time, the Department of Energy has established a Task Force which will proceed as Bill Clagett has indicated, to carefully study the questions that have to be raised. It is our anticipation that we would involve the general public and certain parties and interests in that evaluation so that they have a chance to make their expressions, whatever they may be. However, there are a number of issues that have to be addressed. Bonneville has been around for 50 years, and every year, one way or another, it is woven a little bit more into not only the economic and social fabric of the Pacific Northwest. If you consider California, that expands it further.

Now what assets might be sold, or combination of assets? What about the status of contracts? We have 10,000 outstanding that have to be reviewed. All of them may require renegotiation, because there is an assignment provision in there which requires agreement of both parties.

What about the Supply System involvment? I owe $6 billion on outstanding supply system debts. There are real problems associated with there being any transfer of the security behind the indebtedness that I described.

REFINANCING BPA DEBT

Mr. DICKS. Would the gentleman yield on that?

On that very point, Mr Johnson, I want to welcome you to the Committee. I hope the Chairman will not mind if I ask one little question. It seems to me, with the interest rates having dropped dramatically, we have an ideal opportunity, if we can deal with this litigation question, to get that debt refinanced. Could you comment on that?

Mr. JOHNSON. That is something that we have looked into.

Mr. DICKS. At a much lower cost, maybe a billion or 2 billion in savings to the Northwest.

Mr. **Johnson**. There is a chance to refinance. In fact, if there were not the impediments to refinance right now, I am sure we would have refinanced some of the outstanding debts already.

I have to point out that one of the reasons we have slowed down those nuclear plants, in addition to there being no need for the power, is the simple fact we could not finance them, except out of rates. That would have had such an adverse impact, we ruled that out as an alternative.

So, not all of the impediments still remain, because two of them have been substantially removed. But the threat of bankruptcy and all that implies in the Supply System still exists. There is not any investment banking house on Wall Street that is going to undertake a financing, refinancing, or original financing at this time. And, until we have dispatched those lawsuits through court action or through settlement, I think that impediment, Congressman Dicks will remain.

Mr. **Dicks**. If I can go one step further. It seems to me it would give the parties a very powerful incentive to try and settle the litigation. There ought to be some leadership provided, especially from Bonneville. If we could get the settlement in place. Bonneville would benefit greatly and would be able to refinance those bonds at a dramatic savings to the rate payers in the Northwest.

Mr. **Johnson**. Congressman Dicks, I am anxious to have your ideas, because I have exhausted mine. I have cajoled; I have argued; I have pleaded; I have urged the customers to get together with other parties and interests to settle the litigation and get on about other things. I continue to urge them in this regard.

Bonneville was not accountable; Bonneville does not have a liability. And, just recently, Judge Browning has released the Federal Government from the big lawsuit dealing with default and misrepresentation. So all I can do is argue and attempt to persuade, and I will continue to do that. If you have some new ideas, just give them to me.

Mr. **Dicks**. Thank you. If you have finished your response to me, I know the others do have questions.

Mr. **Johnson**. The only point I would make is that all of these things would have to be addressed. You have to recognize in the case of Bonneville that it is integrated into a number of social expectations that are manifest in other laws—navigation, flood control, irrigation and recreation. All these things, directly or indirectly, are affected by this integrated use of the river system. So those are the things that have to be carefully addressed as we decide exactly what would be for sale. They would ultimately find expression in proposed legislation.

It is going to take some time to get from here to there.

Mr. **Bevill**. I recognize you, Mrs. Smith.

DEFEDERALIZATION

Mrs. **Smith**. Thank you, Mr. Chairman. And a welcome to all of you. I think the issue of privatization has been thoroughly covered, and I was sorry to have to miss the first part of the hearing. I was involved with another hearing about nutrition over in the next room.

Let me ask just one question.

I understood Secretary Herrington when he was here, to say that the privatization of WAPA would not cause any significant increase in the cost of electricity.

Would you like to clarify that?

Mr. CLAGETT. I would love to clarify it

I am not sure what assumptions the Secretary made on that. Certainly, if he treated the outstanding debt to the Treasury as a loan, and that loan were sold on the open market, I am sure you can come up with a situation where there would be no rate increase.

Mrs. SMITH. Anybody else?

Miss FITZPATRICK. Mrs. Smith, I think I will check the record to clarify whatever the Secretary said, and be sure that you have a clear answer. I believe it was repayment reform that we think will have little or no impact on Western area rates, at least in the first year.

REPAYMENT REFORM

Mrs. SMITH. Well, I would like to talk next about repayment reform. I know that you are again proposing a repayment reform. You say that this year's Reform Bill would not have as severe an impact as last year's Reform Bill. Is this because of your proposal to exempt irrigation?

Miss FITZPATRICK. No, the principal difference, Mrs. Smith, would be that last year's proposal was to not only place the repayment on a straight line amortization schedule, but also to increase the interest rates being charged on the outstanding debt. This year, we are not proposing increasing the interest rates.

Mrs. SMITH. So your proposal does not involve any help to agricultural people who currently are spending 15 or 20 percent of their production costs in irrigating and in drying grain?

Miss FITZPATRICK. That is true. Our proposal only involves the Power Marketing Administrations, and the repayment of the allocation of power costs the Federal Government has financed.

SIDNEY TIE-LINE

Mrs. SMITH. Now, let me turn to something parochial, the Sidney Tie-Line. Are you on schedule?

Miss FITZPATRICK. Could I ask Mr. Clagett to answer that?

Mrs. SMITH. By all means.

Mr. CLAGETT. We are on schedule.

DEFEDERALIZATION

Mrs. SMITH. Under current power marketing policies, public utilities are given the first right to buy Federal power. Do you propose any changes if the PMAs are sold?

Miss FITZPATRICK. One of the guidelines that we have for the transfer of PMAs would be to consider and protect the interests of the current customers, and the preference clause is certainly included in that set of interests.

So we would certainly negotiate and look for a situation that would be acceptable to the customers.

EHV PROCUREMENTS

Mrs. SMITH. The 1986 Energy and Water Appropriations Bill contained an increase in the Buy American differential from 6 percent to 25 percent for the procurement of EHV equipment in the current year?

Miss FITZPATRICK. I understand that the Western Area Power Administration does have some planned purchases, and perhaps Mr. Clagett could expand on that.

Mrs. SMITH. How do the PMAs absorb these costs? Are you going to pass the costs to the consumer or to the taxpayer?

Miss FITZPATRICK. Could I ask Mr. Clagett to answer this?

Mr. CLAGETT. The taxpayer absorbs the differential, up to the 25 percent. The 25 percent is a differential that is used in the evaluation process after the determination is made for the qualifications of the supplier and the acceptability of the product. So, the rate payers would pay only that amount which would be the lower cost if this is applied. The differential then would not be a reimbursable cost and would not go into the rates.

Mrs. SMITH. Thank you and thank you, Mr. Chairman. I have no further questions.

Mr. BEVILL. The Chair recognizes Mr. Watkins.

Mr. WATKINS. Thank you, Mr. Chairman.

I will be directing my comments mainly to Mr. Wilkerson, but welcome to all of you. I thank you for coming to our area of the country.

Miss FITZPATRICK. It was my pleasure, Mr. Watkins.

DEFEDERALIZATION

Mr. WATKINS. I think you see why I applied for things to help that sparsely populated area of the country.

I am interested in the Administration's purpose and thrust of privatization. Would you elaborate on that just briefly for me.

Miss FITZPATRICK. The primary purpose of the privatization or defederalization of the Power Marketing Administration is to place the regional resources under regional control. There is no particular advantage to having the Federal Government administering what are essentially regional interests. We think that they could be operated better by the people who enjoy those benefits if those people themselves have control of those resources.

Mr. WATKINS. What groups do you see that would be in the bidding for Power Marketing Administration activities, such as the Southwestern Power Administration?

Miss FITZPATRICK. I would think that the current customers are certainly among the potential purchasers. Other bodies, entities, that exist now, or perhaps do not exist, and would be organized for the purpose, are also potentials.

Mr. WATKINS. How do you propose to protect the areas being served by the Power Marketing Administration? Especially, I am thinking of the low income, under populated areas. How are they going to figure in this? It looks to me like they are going to be left out of the picture, if this occurs. I mean, they are not going to have any say over what happens under privatization.

Miss FITZPATRICK. Mr. Watkins, one of the principles is that we will protect the current customers. I think we can do that by structuring a proposal and negotiating a proposal which does take into consideration not just the people who may have more financial resources available to them, but also all the people for whom these systems were built and who have been served by them for these many years.

We are quite conscious of the fact that the Department has no authority to make a transfer of these systems without the approval of Congress, and we are quite aware that whatever is brought to Congress will have to be something that is seen as a win-win situation, something that is benefitting all of the parties that are involved.

NON-FEDERAL FINANCING OF PROJECTS

Mr. WATKINS. Let me ask a question. Is it true that the Power Marketing Administrations, as opposed to other entities, must market power produced at a Federal dam project? Even if a non-federal entity puts up 100 percent of the costs of the project? And, if so, on what do you base this requirement?

Miss FITZPATRICK. I am sorry. I do not think I understand your question, Mr. Watkins. Are you sure this is non-federal financing of a dam?

Mr. WATKINS. If there is an entity that wants to put a unit on a federal project that is authorized by Congress, and they put up 100 percent, is it true that the Power Marketing Administration must market the power from those units?

Miss FITZPATRICK. I am not aware that we have a requirement to market it. I do not know the source of that. Perhaps Mr. Wilkerson can answer the question.

Mr. WILKERSON. Mr. Watkins, it is my understanding in our particular part of the country that we are the designated Federal Power Marketing entity, to market power generated at Federal projects; and we are administering the program on that basis.

Mr. WATKINS. Do you consider this a little bit contradictory when we are trying to sell the Power Marketing Administration? Are we saying that you are not going to privatize in a piece-meal way, one unit at a time or two units at a time? Are we going to control it inhouse through the Power Marketing Administration? Let me ask another question here.

Does the Corps of Engineers or the Power Marketing Administration have the lead responsibility to obtain non-federal sponsors for federal power projects?

Miss FITZPATRICK. As I have understood the development of those non-federally financed projects, Mr. Watkins, they have generally been proposed by the financers, people who want to see the projects built and are willing to undertake the financing. They come to the Corps and to us, the Power Marketing Administrations, and propose what they would like to do. I think we and the Corps are both engaged, as we have been for years, in general resource assessment studies.

Mr. WATKINS. The Corps has been doing the feasibility studies?

Miss FITZPATRICK. Yes.

Mr. WATKINS. If the Corps does the studies based on assurances from a non-federal entity, means that the non-federal entity becomes the non-federal sponsor of the project automatically?

Miss FITZPATRICK. In effect, they undertake the responsibility to provide financing, that is true. So they are responsible.

Mr. WATKINS. They become the sponsors at that time.

Miss FITZPATRICK. Yes.

LOAD FLEXIBILITY

Mr. WATKINS. Well, that is interesting. I am trying to utilize more of the potential of my part of the State in Oklahoma. I have a number of questions I would like to ask Mr. Wilkerson. You have made a comment several times about the policy of increased flexibility of use of Government power. Would you elaborate on what you mean by that?

Mr. WILKERSON. Mr. Watkins, what we are referring to when we talk about increased flexibility is the way we had administered our policy before in the sale of peaking power is that the customer must take delivery of the peaking power at the contract rate of delivery; that was his obligation. We have offered the customers a change in that by saying they can take the delivery of the same amount of energy, but at a lower rate of delivery. This has a benefit for some customers located far from our transmission system of having lower wheeling costs to move that power from our system into their load.

It has the effect of decreasing their costs without increasing ours. That is one way.

Another flexibility that we have——

Mr. WATKINS. Does this cost the Government?

Mr. WILKERSON. Nothing. It costs the Government nothing. It is just a matter of us recognizing our customers' need, but we will receive the same income.

Mr. WATKINS. Are you having a lot of customers taking advantage of this?

Mr. WILKERSON. We have several that are looking at that very seriously. Also, we have the flexibility of customers who have an allocation, and because they have perhaps purchased some generating capacity from a nuclear plant, or a coal-fired plant, at the current time, really do not have a use for that much capacity; but it is a kind of take or pay sort of arrangement. So we have given them the flexibility of temporarily loaning their allocation to another customer.

NON-REPAYABLE FINANCING

Mr. WATKINS. Let me move on because I am going to have to leave in a few minutes. Under your available revenue, do you have some non-repayable funds? Funds that are not included in your rate base.

Mr. WILKERSON. Under our current situation, we do not. As was mentioned earlier, if we were involved in this Buy America thing, if we were to purchase high voltage equipment, and were to pay a differential that was greater than what it has been in the past, that differential, according to the Act of last year, would be non-repayable.

Mr. WATKINS. Let me ask the rest of you if you have non-repayable funds.

Mr. CLAGETT. Do you want to go down the line?

Mr. WATKINS. Yes.

Mr. CLAGETT. We essentially do not, except for the potential of Buy American.

Mr. WATKINS. The question is do you have any non-repayable funds provided to you?

Mr. JOHNSON. No

Mr. CROSS. Mr. Watkins, there are two pieces of legislation on reimbursement costs in Alaska. One is a major transmission problem, non-reimbursable because of specific legislation. Otherwise, we do not have non-reimbursable funds.

Mr. WATKINS. Are those monies appropriated to you for that purpose?

Mr. CROSS. The moneys were appropriated and spent in repairs and the costs were made non-reimbursable.

Mr. WATKINS. I may follow up in depth on that question.

Thank you very much. Thank you, Mr. Chairman.

Mr. BEVILL. The Chair recognizes Mr. Conte, my good friend and colleague, and also the Ranking Minority Member of the House Appropriations Committee.

Mr. CONTE. Thank you, Mr. Chairman.

Thank you, and the rest of the Committee. I know how busy you are.

I want to join you in welcoming this distinguished panel, before your Committee this morning, Mr. Chairman.

The policies and budgets in the Power Marketing Administration are of great interest to me, as you know, and I look forward to a very informative and a very interesting hearing.

Mr. Johnson, it is a pleasure to see you again, and have this opportunity to talk to you a bit about the Bonneville Power Administration.

EHV PROCUREMENTS

Let me begin with a general background question. What is the source of the Bonneville procurement authority? Does it come under the Federal Acquisition Regulation or other regulation?

Mr. JOHNSON. I am going to ask my staff to assist me if my answer is not complete. Under the Bonneville Project Act, the Administrator is given a broad authority to purchase equipment, materials, and services to enter into those contracts as necessary to discharge his obligation under that Act.

I am informed that, yes, that is a correct answer, and that we follow regulations similar to the Federal Acquisition Regulations.

Mr. CONTE. Leaving aside the historical and the current legal consideration, is there any strong policy reason that Bonneville should be covered by different procurement requirements and regulations than the other Power Marketing Administrations?

Mr. JOHNSON. I am not sure I understand the question.

Mr. CONTE. The question is very clear. Should Bonneville be governed by different procurement requirements and regulations than any other Power Marketing Administration?

Mr. JOHNSON. I think we should be governed by those laws which give the Administrators the authority to carry out their missions. The Bonneville Project Act is fairly broad in giving such discretion to the Administrator.

Mr. CONTE. Broad authority?

Mr. JOHNSON. Broad authority. But, as I indicated, we follow procurement regulations similar to the rest of the Federal Government. But this authority is unique to Bonneville and, the Tennessee Valley Authority in discharging our obligations under the law and meeting the requirements of the law governing our self financed activities.

Mr. CONTE. Is there any policy that would allow you to be given any other authority?

Mr. JOHNSON. I think there is a 2(f) authority, provision 2(f) of the Bonneville Project Act of 1937, which is unique. Over time, our authorities have been interpreted to apply, on a choice basis, so as to generally follow the procurement regulations of the rest of the Federal Government.

The Agency is self-financing, which is different than all of the other Power Marketing Administrations. So it has a different obligation under the law, than the other Power Marketing Administrations. This is certainly an important difference between Bonneville and the other PMAs.

Mr. CONTE. Miss Fitzpatrick, I think this has been my first opportunity to welcome you here before the Subcommittee since your confirmation by the Senate. I congratulate you.

Miss FITZPATRICK. Thank you, Mr. Conte.

Mr. CONTE. Miss Fitzpatrick, from the Department's standpoint, is there any policy justification for having different policies and practices from one Power Marketing Administration to another? In fact, would not uniformity be desirable?

Miss FITZPATRICK. As far as I know, Mr. Conte, four of the Power Marketing Administrations have received appropriated funds for their operations and follow the general Federal Acquisition Regulations. Bonneville is the only exception. There is no policy in the Department requiring unifornity specifically because that is a historical fact that has existed for many decades.

Mr. CONTE. As a matter of policy, would it not be better to have some uniformity?

Miss FITZPATRICK. I cannot say, Mr. Conte. I am not that familiar with the issue. I would only note that the four Power Marketing Administrations, aside from Bonneville, receive appropriated funds for their operation and maintenance, and Bonneville does not.

Mr. DICKS. Would the gentleman yield?

Mr. CONTE. Sure.

Mr. DICKS. I think it is called self-financing legislation.

Miss Fitzpatrick. That is correct.

Mr. Conte. Would you elaborate?

Miss Fitzpatrick. Yes, sir

Mr. Conte. Mr. Johnson, under the Buy American Act, the head of an Agency or Department has certain authority with regard to the Buy American differential. Do you have that authority as Administrator of Bonneville, or does the Secretary of Energy make that determination in the case of the Bonneville Power Administration?

Mr. Johnson. I think that is a decision to be made by the Secretary of Energy.

Mr. Conte. Mr. Johnson, will you provide for the record a list of Bonneville's procurements, as defined in last year's Energy and Water Conference Report, during the past 10 years. Also provide an indication of the successful bidder for each and the bidder's nationality?

Mr. Johnson. Yes, we will.

[The information follows:]

Bonneville Power Administration

Summary of Foreign and Domestic EHV Acquisition FY 77 - FY 86:

	Domestic($)	Foreign($)	Total ($)
FY 77	32,435,746	7,651,147	40,086,893
FY 78	6,701,028	8,084,972	14,786,000
FY 79	14,097,088	6,400,343	20,497,431
FY 80	36,523,295	13,347,814	49,871,109
FY 81	47,818,985	20,087,657	67,906,642
FY 82	24,897,576	34,471,657	59,369,233
FY 83	19,712,691	7,310,207	27,022,898
FY 84	61,561,732	10,957,822	72,519,554
FY 85	12,817,699	2,359,587	15,177,286
FY-86	56,454,591	0	56,454,591
TOTAL	313,020,431	110,671,206	423,691,637

	Domestic($)	Foreign($)	Total ($)
Total FY 77-82	$162,473,718	$90,043,590	$252,517,308
% of total $$	64%	36%	
Total FY 83-86	$150,546,713	$20,627,616	$171,174,329
% of total $$	88%	12%	

3630B

Bonneville Power Administration

FY 77

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
7194A	02/16/78	Westinghouse	D	D	29,490		Capacitors
7150H	01/18/77	Westinghouse	D	D	98,000		Capacitors
7001A	03/31/77	Cogenel	F France	F		1,698,200	Circuit Breakers
7157A	08/15/77	Copperweld, Bimetallics Div.	D	D	235,232		Conductor
7232A	06/16/77	Reynolds Metal	D	D	18,952,200		Conductor
7303A	06/17/77	Alcoa Conductor Products	D	D	172,790		Conductor
72323	05/20/77	Alcoa Conductor	D	D	77,582		Conductor
7286A	08/23/77	Gardiner Mfg.	D	D	175,420		Conductor Hardware
7286B	08/23/77	Lindsey Mfg.	D	D	161,534		Conductor Hardware
7286C	08/23/77	MCK-Locke	D	D	40,545		Conductor Hardware
7286D	08/23/77	Columbia Forge	D	D	31,199		Conductor Hardware
7263A	06/21/77	Alcan Cable West	D	D	235,812		Conductor Hardware
7264A	05/26/77	Pengo Div. of .O.I.	D	D	39,057		Conductor Hardware
7152B	02/16/78	MCK-Locke	D	D	171,456		Conductor Hardware
7154A	02/18/78	S & C Electric	D	D	52,106		Fuse Units
7309A	08/03/77	MCK-Locke	D	D	65,670		Insulator
7217A	05/06/77	MCK-Locke	D	D	341,722		Insulator
7181H	04/18/77	Ohio Brass	D	D	44,400		Insulator
7215A	03/31/77	MCK-Locke	D	D	1,282,198		Insulator
7177H	02/09/78	Ohio Brass	D	D	29,992		Insulator
7118A	02/11/78	MCK-Locke	D	D	1,155,063		Insulator
7188H	02/04/78	MCK-Locke	D	D	35,525		Insulator
7399A	09/21/77	Willamette Mfg. & Supply	D	D	349,995		Tower Steel
7253A	07/08/77	American Pole	D	D	113,464		Tower Steel
7283A	06/14/77	Muskogee Iron Works	D	D	107,252		Tower Steel
7296A	06/24/77	Willamette Mfg. & Supply Co.	D	D	100,327		Tower Steel
7297A	06/17/77	Willamette Mfg. & Supply Co.	D	D	43,316		Tower Steel
7207A	05/16/77	Bethlehem Steel	D	D	2,702,523		Tower Steel
7207B	05/20/77	U.S. Steel Corp.	D	D	4,363,960		Tower Steel
7216A	03/31/77	Willamette Mfg. & Supply	D	D	207,779		Tower Steel
7143A	03/31/77	Willamette Mfg. & Supply	D	D	64,729		Tower Steel
7143B	03/31/77	Calfred Industries	D	D	26,233		Tower Steel
6504A	02/25/78	Nissho-Iwai	F Japan	F		3,747,989	Tower Steel
7246H	09/12/77	Mitsui	F Japan	F		1,880,691	Transformers
7280A	06/01/77	Brown Boveri	F Switzerland	F		69,717	Transformers
7131A	02/28/78	Legnano Electric	F Italy	F		254,550	Transformers
7131B	02/28/78	McGraw-Edison	D	D	354,614		Transformers
7131C	02/28/78	Westinghouse	D	D	574,561		Transformers
		TOTAL			32,435,746	7,651,147	

Bonneville Power Administration

FY 78

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
0960	06/08/78	General Electric	D	D	145,319		Capacitors
1380	06/05/78	Westinghouse	D	D	148,032		Capacitors
7350A	10/28/77	General Electric	D	D	285,611		Capacitors
0822	12/30/77	Brown Boveri Corp.	F Switzerland	F		773,220	Circuit Breakers
0821	12/30/77	Cogenel	F France	F		613,152	Circuit Breakers
7430A	11/02/77	Kilsby Tube Supply	D	D	83,831		Conductor
1460	04/10/78	Reynolds Metals	D	D	59,435		Conductor Hardware
2130	07/14/78	Modulus Corp.	D	D	174,724		Conductor Hardware
7427A	09/30/77	AMP Special Ind.	D	F Canada		28,960	Conductor Hardware
7396A	09/30/77	SA Electric Trans.	F	F		456,640	Conductor Hardware
7396B	11/04/77	Bethlehem Steel	D	D	362,218		Conductor Hardware
0300	12/07/77	S & C Electric	D	D	36,278		Fuses
7327A	09/27/77	NGK-Locke	D	D	488,516		Insulator
1520	03/24/78	Sediver, Inc.	D	D	130,264		Insulator
7327B	10/25/77	Sediver, Inc.	D	D	1,249,916		Insulator
1690	09/22/78	ASEA	D	F		3,333,900	Reactors
1983	06/21/78	Westinghouse	D	D	58,478		Relays
1370	05/24/78	Vulcan Steel	D	D	345,896		Tower Steel
0880	05/31/78	ITT Meyer Ind.	D	D	82,666		Tower Steel
2200	08/15/78	Willamette Mfg.	D	D	36,260		Tower Steel
2910	09/26/78	Muskogee Iron Works	D	D	35,387		Tower Steel
0029	11/17/77	Northwest Tube	D	D	44,254		Tower Steel
0570	03/17/78	Westinghouse	D	D	594,000		Transformers
2100	06/01/78	Westinghouse	D	D	54,187		Transformers
1990	08/14/78	American Elin	F Austria	F		2,879,100	Transformers
3190	09/28/78	Siemens-Allis	D	D	1,780,095		Transformers
0740	12/28/77	Westinghouse	D	D	495,661		Transformers
		TOTAL			6,701,028	8,084,972	

Bonneville Power Administration

FY 79

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
10491	4/6/79	General Electric	D	D	726,021		Capacitors
11578	12/13/78	Brown Boveri Corp.	F Switzerland	F		315,458	Circuit Breakers
12811	3/30/79	Siemens-Allis	D	D	63,500		Circuit Breakers
10120	12/6/78	ALCOA	D	D	147,489		Conductor
12404	2/2/79	Kilsby Tube Supply	D	D	25,671		Conductor
11485	2/7/79	Anaconda Aluminum	D	D	38,632		Conductor
12652	3/8/79	ALCOA	D	D	73,872		Conductor
11955	6/12/79	ALCOA	D	D	1,151,941		Conductor
13222	6/14/79	ALCOA	D	D	3,300,452		Conductor
14799	7/19/79	Reynolds Metals	D	D	106,747		Conductor
14556	8/3/79	ALCOA	D	D	83,941		Conductor
14583	8/10/79	Kanematsu-Gosho	F Japan	F		52,433	Conductor
16437	9/20/79	NGK Locke	F Japan	F		28,568	Conductor
10991	1/29/79	S & C Electric	D	D	26,489		Fuse Units
11986	4/18/79	Lapp Insulator	D	D	78,173		Insulator
13450	9/26/79	Sediver, Inc.	D	D	404,460		Insulator
16644	9/27/79	NGK Locke	D	D	535,550		Insulator
10823	11/3/78	Hitachi	F Japan	F		821,562	Reactors
11064	11/15/78	ASEA	F Sweden	F		218,845	Relays
10916	2/13/79	Ohio Brass	D	D	115,608		Surge Arresters
15972	9/21/79	General Electric	D	D	91,300		Surge Arresters
10571	12/8/78	Nissho-Iwai	F Japan	F		679,825	Tower Steel
10882	1/18/79	Potomic Iron Works	D	D	181,892		Tower Steel
11085	1/15/79	Willamette Mfg.	D	D	269,578		Tower Steel
11981	4/26/79	Willamette Mfg.	D	D	77,414		Tower Steel
14016	4/26/79	Great Western Steel	D	D	33,698		Tower Steel
14014	5/4/79	Willamette Mfg.	D	D	57,808		Tower Steel
12014	5/24/79	ITT Meyers Ind.	D	D	371,742		Tower Steel
14431	8/3/79	Willamette Mfg.	D	D	101,116		Tower Steel
14432	8/21/79	Muskogee Iron Works	D	D	59,339		Tower Steel
14752	9/14/79	Willamette Mfg.	D	D	39,200		Tower Steel
14707	9/14/79	Willamette Mfg.	D	D	215,308		Tower Steel
15129	9/14/79	Nichimen	F Japan	F		1,181,735	Tower Steel
13436	9/14/79	Nissho-Iwai	F Japan	F		725,130	Tower Steel
12840	2/16/79	Pacific Power & Light	D	D	52,897		Transformer
10284	2/1/79	General Electric	D	D	67,038		Transformers
12477	2/1/79	Electromagnetic Ind.	D	D	230,010		Transformers
12478	2/1/79	Emile-Haefely	F Germany	F		60,897	Transformers
10427	12/21/78	Cogenel	F France	F		147,540	Transformers
10674	1/31/79	General Electric	D	D	1,680,789		Transformers
10646	2/12/79	American Elin	F France	F		1,317,300	Transformers
11086	2/14/79	Westinghouse	D	D	29,000		Transformers
14648	6/6/79	Emile-Haefely	F Germany	F		37,050	Transformers
13197	7/3/79	Italtrafo	F Italy	F		814,000	Transformers
14041	7/11/79	General Electric	D	D	86,321		Transformers
15238	7/11/79	Federal Pacific Electric	D	D	273,553		Transformers
12807	7/13/79	Westinghouse	D	D	428,026		Transformers
15605	9/6/79	General Electric	D	D	212,100		Transformers
14688	9/26/79	General Electric	D	D	2,660,415		Transformers
		TOTAL			14,097,088	6,400,343	

FY 80

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
17485	2/25/80	General Electric	D	D	459,000		Capacitor
20528	7/22/80	General Electric	D	D	299,700		Capacitor
19373	5/13/80	S&C Electric	D	D	172,039		Capacitor & Reactor
13593	11/16/79	Reynolds Metal	D	D	491,954		Conductor
17393	3/28/80	ALCOA	D	D	22,891,907		Conductor
19085	4/17/80	ALCOA	D	D	51,300		Conductor
19533	4/21/80	Kilsby Tube Supply	D	D	110,160		Conductor
18269	6/4/80	ALCOA	D	D	113,524		Conductor
22008	8/18/80	ALCOA	D	D	151,321		Conductor
21864	8/21/80	Summers Electric	D	D	117,064		Conductor
19375	6/10/80	Palnut Div. TRW	D	D	97,856		Conductor Hardware
18758	6/24/80	NGK-Locke Inc.	F Japan	F		93,625	Conductor Hardware
22032	6/24/80	Vernon Anderson	D	D	26,063		Conductor Hardware
21113	7/11/80	Lindsey Mfg.	D	D	104,751		Conductor Hardware
20737	7/11/80	Vernon Anderson	D	D	302,280		Conductor Hardware
19434	7/18/80	Modulus Corp.	D	D	1,073,697		Conductor Hardware
21358	8/14/80	Midland Metals	D	D	30,013		Conductor Hardware
20210	9/22/80	ALCOA	D	D	26,521		Conductor Hardware
20775	9/30/80	NGK Locke	F Japan	F		26,842	Conductor Hardware
17200	12/19/79	S&C Electric	D	D	63,874		Fuse Units
16663	2/7/80	Mitsubishi	F Japan	F		649,550	Gas Insulated Substation
18513	3/20/80	NGK Locke, Inc.	D	D	443,292		Insulator
20007	3/21/80	Sediver	D	D	369,660		Insulator
18951	3/24/80	NGK Locke, Inc.	D	D	315,920		Insulator
20093	3/28/80	Lapp Insulator	D	D	603,000		Insulator
20867	7/18/80	NGK Locke	D	D	2,071,894		Insulator
22768	8/13/80	Utility Equip.	D	D	129,612		Insulator
23084	9/10/80	N. Young Steel Fab.	D	D	49,800		Insulator
18486	5/8/80	ASEA	F Sweden	F		1,346,700	Reactors
18016	4/29/80	Westinghouse	D	D	41,022		Relays
18957	7/25/80	General Electric	D	D	280,000		Relays
18528	4/17/80	Willamette Mfg.	D	D	117,490		Structural Units
19012	5/9/80	Westinghouse	D	D	126,180		Surge Arrestors
15901	10/17/79	Willamette Mfg.	D	D	128,664		Tower Steel
17261	10/17/79	Mass Custom Design	D	D	31,830		Tower Steel
16100	11/14/79	Northern Steel	D	D	27,525		Tower Steel
15646	12/10/79	ITT Meyer Indust.	D	D	329,107		Tower Steel
20067	3/28/80	Sumitomo Corp.	F Japan	F		1,793,180	Tower Steel
17226	3/28/80	Nichimen	F Japan	F		1,972,835	Tower Steel
20454	4/11/80	Great Western Steel	D	D	171,441		Tower Steel
17968	4/11/80	Nichimen Co.	F Japan	F		1,269,549	Tower Steel
21977	6/19/80	Willamette Mfg.	D	D	249,144		Tower Steel
18981	6/2/80	Great Western	D	D	75,953		Tower Steel
19741	6/26/80	Willamette Mfg.	D	D	46,754		Tower Steel
20369	6/30/80	Sumitomo Corp.	F Japan	F		4,473,592	Tower Steel
19073	6/4/80	Willamette Mfg.	D	D	231,046		Tower Steel
19074	7/3/80	Greenberry Tank	D	D	330,933		Tower Steel
22148	7/7/80	Great Western Steel	D	D	1,186,822		Tower Steel

FY 80 (continued)

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
22624	8/14/80	Great Western Steel	D	D	200,830		Tower Steel
14689	10/5/79	Square D	D	D	394,000		Transformers
17099	2/12/80	American Ligurian	F Italy	F		490,985	Transformers
15672	2/14/80	Cogenel	F France	F		89,151	Transformers
16350	2/20/80	General Electric	D	D	1,219,560		Transformers
17502	2/6/80	General Electric	D	D	152,000		Transformers
18203	3/17/80	Electromagnetic Ind.	D	D	104,000		Transformers
19832	3/17/80	Westinghouse	D	D	39,084		Transformers
21466	5/30/80	Smit Transformatoren	F Holland	F		846,200	Transformers
21845	6/11/80	Emile Haefely	F Germany	F		295,605	Transformers
20772	9/19/80	Westinghouse	D	D	473,708		Transformers
		TOTAL			36,523,295	13,347,814	

Bonneville Power Administration

FY 81

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
26412	8/31/81	General Electric	D	D	539,870		Capacitors
23738	8/26/81	Westinghouse	D	D	9,485,658		Capacitors
22750	12/19/80	Hitachi	F Japan	F		450,000	Circuit Breakers
25884	12/31/80	Westinghouse	D	D	1,300,000		Circuit Breakers
26700	5/1/81	Brown Boveri	F Switzerland	F		915,020	Circuit Breakers
21131	12/9/80	Kaiser Alum. & Chem.	D	D	7,775,735		Conductor
24321	1/3/81	Kaiser Alum. & Chem.	D	D	31,503		Conductor
260[illegible]8	2/17/81	Copperweld	D	D	33,431		Conductor
26678	4/3/81	Kaiser Alum. & Chem.	D	D	26,959		Conductor
27360	6/10/81	Kaiser Alum. & Chem.	D	D	199,537		Conductor
27605	8/21/81	ALCOA	D	D	2,664,463		Conductor
25094	1/15/81	Travis Pattern & Fdry	D	D	30,250		Conductor Hardware
24462	1/21/81	Columbia Forge	D	D	29,156		Conductor Hardware
24339	1/23/81	A. Salvi	F Italy	F		44,438	Conductor Hardware
23820	1/23/81	Continental Electric	D	D	35,100		Conductor Hardware
25843	2/24/81	Bethlehem Steel	D	D	129,574		Conductor Hardware
25163	2/27/81	Fargo Mfg.	D	D	33,595		Conductor Hardware
26946	4/29/81	ALCOA	D	D	56,287		Conductor Hardware
27065	4/29/81	Fargo Mfg.	D	D	29,097		Conductor Hardware
27568	6/17/81	Dimensional Fabric.	D	D	36,839		Conductor Hardware
27933	6/26/81	Modulus Corp.	D	D	2,268,314		Conductor Hardware
28281	6/29/81	Palnut Div., TRW	D	D	118,267		Conductor Hardware
27893	7/10/81	Mitsui	F Japan	F		253,956	Conductor Hardware
27571	7/21/81	Fargo Mfg.	D	D	194,929		Conductor Hardware
28283	7/24/81	Springfield Fasteners	D	D	82,194		Conductor Hardware
27492	8/4/81	Square D	D	D	53,610		Conductor Hardware
30950	8/4/81	NGK Locke	F Japan	F		168,132	Conductor Hardware
30949	8/7/81	Lindsey Mfg.	D	D	113,220		Conductor Hardware
27567	8/7/81	Anderson Forge	D	D	325,335		Conductor Hardware
27569	8/26/81	Bethea National	D	D	469,663		Conductor Hardware
29211	9/9/81	Power Line Hdwe.	D	D	25,200		Conductor Hardware
29795	9/24/81	Tension Stringing	D	D	193,000		Conductor Hardware
22094	12/2/80	S & C Electric	D	D	40,678		Fuse Units
26465	7/2/81	S & C Electric	D	D	44,347		Fuse Units
30446	8/4/81	General Electric	D	D	47,136		Fuse Units
23020	10/27/80	Ohio Brass	D	D	34,218		Insulator
25164	4/1/81	NGK Locke	D	D	160,482		Insulator
26254	4/1/81	Lapp Insulator	D	D	28,717		Insulator
26082	5/7/81	NGK Locke	D	D	541,190		Insulator
31854	9/29/81	Sediver	F France	F		88,100	Insulator
29083	5/29/81	NGK Locke	D	D	268,256		Insulator
28045	8/21/81	Trench	F Canada	F		104,868	Reactor
23395	12/23/80	ASEA	F Sweden	F		5,263,155	Reactors
30799	9/10/81	ASEA	F Sweden	F		339,800	Reactors
29034	8/20/81	General Electric	D	D	25,523		Relays
30454	6/14/81	General Electric	D	D	442,233		Surge Arresters
31861	9/16/81	General Electric	D	D	31,008		Surge Arresters

Bonneville Power Administration

FY 81 (continued)

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
23387	10/6/80	Pacific Metal	D	D	38,015		Tower Steel
22758	10/20/80	ITT Meyer Ind.	D	D	1,428,564		Tower Steel
20434	11/7/80	T & D Structures	D	D	310,134		Tower Steel
23712	12/2/80	Willamette Mfg.	D	D	34,617		Tower Steel
24026	1/9/81	Great Western Steel	D	D	197,146		Tower Steel
25994	1/28/81	Great Western Steel	D	D	121,808		Tower Steel
26679	2/4/81	Great Western Steel	D	D	37,837		Tower Steel
25642	4/23/81	Advance Inductries	D	D	951,895		Tower Steel
26243	4/27/81	R.W. Taylor Stee.	D	D	3,725,324		Tower Steel
25679	4/27/81	Anchor Metals	D	D	4,596,714		Tower Steel
27578	4/6/81	Oregon Steel Mills	D	D	37,045		Tower Steel
28313	4/29/81	Nichimen	F Japan	F		7,929,972	Tower Steel
27431	6/18/81	Great Western Steel	D	D	349,809		Tower Steel
27189	6/17/81	Advance Industries	D	D	423,160		Tower Steel
27126	6/24/81	Sumitomo	F Japan	F		661,980	Tower Steel
29228	6/26/81	Great Western Steel	D	D	36,925		Tower Steel
29738	7/2/81	Willamette Mfg.	D	D	105,331		Tower Steel
30482	7/9/81	Levinson Steel	D	D	58,599		Tower Steel
30366	7/9/81	Azco Steel	D	D	331,985		Tower Steel
28559	7/27/81	Northern Steel & Spy	D	D	28,914		Tower Steel
28224	8/14/81	American Boiler Works	D	D	129,573		Tower Steel
29201	9/9/81	Blodgett Steel Fab.	D	D	472,741		Tower Steel
31617	9/9/81	Die-Tran Products	D	D	53,050		Tower Steel
31982	9/24/81	Willamette Mfg.	D	D	66,526		Tower Steel
30663	9/29/81	Sumitomo	F Japan	F		984,688	Tower Steel
22946	11/17/80	Ritz Messwandler	F Germany	F		352,500	Transformers
23646	12/31/80	Westinghouse	D	D	1,642,981		Transformers
27873	4/17/81	Electromagnetic	D	D	69,600		Transformers
27614	4/24/81	General Electric.E.	D	D	2,098,764		Transformers
23927	3/27/81	Smit-Holec	F Holland	F		2,078,550	Transformers
27979	5/6/81	General Electric	D	D	49,236		Transformers
27214	5/28/81	Westinghouse	D	D	1,705,500		Transformers
27413	6/29/81	Hevi-Duty Electric	D	D	48,600		Transformers
28159	7/31/81	Emile-Haefely	F Germany	F		193,273	Transformers
30931	7/31/81	General Electric	D	D	49,080		Transformers
30933	7/31/81	Balteau Standard	D Belgium	D	96,198		Transformers
28224	8/14/81	Trench Electric	F Canada	F		139,425	Transformers
25098	9/24/81	Mitsubishi	F Japan	F		119,800	Transformers
29031	9/30/81	Balteau Standard	D	D	87,900		Transformers
30700	9/30/81	Federal Pacific Elec.	D	D	459,832		Transformers
		TOTAL			47,818,985	20,087,657	

Bonneville Power Administration

FY 82

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
32820	1/20/82	General Electric	D	D	10,014,755		Capacitors
28794	10/19/81	Cogenel	F France	F		208,210	Circuit Breakers
30466	10/19/81	Cogenel	F France	F		102,900	Circuit Breakers
30355	10/27/81	Alcoa	D	D	827,377		Conductor Hardware
32644	11/5/81	Columbia	D	D	40,000		Conductor Hardware
31225	11/19/81	Fargo Mfg.	D	D	28,492		Conductor Hardware
31224	11/30/81	Columbia Forge	D	D	35,786		Conductor Hardware
33118	1/29/82	Rome Cable	D	D	197,300		Conductor Hardware
33609	2/11/82	Reynolds Metal	D	D	255,495		Conductor Hardware
34456	4/22/82	Cressona Aluminum	D	D	174,074		Conductor Hardware
34994	5/12/82	Lindsey Mfg. Co.	D	D	34,776		Conductor Hardware
35754	5/13/82	Reynolds Aluminum	D	D	86,286		Conductor Hardware
35407	5/13/82	Reynolds Aluminum	D	D	27,135		Conductor Hardware
35938	7/14/82	Columbia Forge	D	D	39,150		Conductor Hardware
36757	9/23/82	Cressona	D	D	192,700		Conductor Hardware
29115	11/13/81	S&C Electric	D	D	39,368		Fuse Units
33342	1/13/82	S&C Electric	D	D	39,105		Fuse Units
33495	2/25/82	S&C Electric	D	D	57,327		Fuse Units
36155	5/10/82	S&C Electric	D	D	29,556		Fuse Units
36602	7/28/82	S&C Electric	D	D	29,836		Fuse Units
28148	12/01/81	ASEA	F Sweden	F		30,000,000	HVDC Upgrade
31488	12/4/81	Lapp Ins.	D	D	657,000		Insulator
31840	12/10/81	NGK-Locke	D	D	371,903		Insulator
32406	12/10/81	Sediver, Inc.	D	D	214,000		Insulator
32408	12/15/81	NGK-Locke	D	D	75,962		Insulator
33668	12/18/81	Ohio Brass	D	D	720,620		Insulator
36557	5/28/82	Lapp Insulators	D	D	237,330		Insulator
36440	7/20/82	Willamette Mfg.	D	D	169,929		Insulator
37080	9/16/82	Willamette Mfg.	D	D	195,856		Insulator
28444	10/29/81	ASEA	D	D	3,414,293		Relays
34490	4/5/82	General Electric	D	D	68,858		Relays
34942	5/19/82	General Electric	D	D	250,000		Relays
33310	2/3/82	Electra Switch	D	D	44,071		Relays
32510	10/16/81	Schmitt Steel	D	D	70,213		Tower Steel
29901	10/16/81	Trench Co.	F Canada	F		46,502	Tower Steel
30888	11/9/81	Keizer	D	D	36,598		Tower Steel
31625	11/12/81	Great Western	D	D	27,950		Tower Steel
33313	1/15/82	Greenberry Tank	D	D	164,199		Tower Steel
33683	1/8/82	CF&I Steel	D	D	109,481		Tower Steel
33679	1/21/82	Great Western Steel	D	D	240,526		Tower Steel
33378	2/16/82	ITT Meyers	D	D	65,360		Tower Steel
34947	4/6/82	AZCO Steel	D	D	31,746		Tower Steel
34516	4/13/82	Blodgett Steel	D	D	43,808		Tower Steel
34476	5/6/82	Greenberry Tank	D	D	131,428		Tower Steel
33937	5/4/82	Bethlehem Steel	D	D	57,993		Tower Steel
34974	5/19/82	Willamette Mfg.	D	D	302,198		Tower Steel
35391	5/28/82	Valmonts/ALS	D	D	66,900		Tower Steel
33621	6/10/82	Societa Gnonina	F Italy	F		59,040	Tower Steel

FY 82 (continued)

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
36995	7/21/82	Modulus Corp.	D	D	27,722		Tower Steel
35978	7/8/82	LeGrand Steel	D	D	112,556		Tower Steel
37476	7/14/82	Great Western	D	D	85,669		Tower Steel
37765	7/30/82	Koff Electric	D	D	54,583		Tower Steel
37201	9/1/82	American Steel	D	D	38,426		Tower Steel
36759	9/3/82	Bethlehem Steel	D	D	310,389		Tower Steel
37177	9/16/82	Lehigh Structural	D	D	39,957		Tower Steel
31349	12/31/81	Trench	F Canada	F		571,675	Transformers
32197	2/25/82	Siemens-Allis	D	D	1,922,284		Transformers
31924	3/8/82	Nissho Iwai	F Japan	F		785,000	Transformers
32823	11/20/81	General Electric	D	D	1,839,566		Transformers
31623	11/27/81	Balteau Elec.	F Belgium	F		210,304	Transformers
31517	2/10/82	BTE ASEA	D	F		2,142,331	Transformers
34201	1/10/82	Federal Pacific	D	D	283,000		Transformers
34202	2/10/82	Westinghouse	D	D	151,886		Transformers
32522	2/18/82	American Elin	F Austria	F		223,800	Transformers
36421	5/21/82	Associated Engr.	D	D	37,404		Transformers
34727	5/21/82	Emile Haefely	F Germany	F		121,895	Transformers
34044	6/29/82	Westinghouse	D	D	77,394		Transformers
		TOTAL			24,897,576	34,471,657	

Bonneville Power Administmation

FY 83

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
39630	11/18/82	Tennessee Valley Authority	D	F France		2,060,000	Circuit Breakers
39955	1/26/83	Reynolds Metals	D	D	367,556		Conductor
12111	8/4/83	Anderson Forge	D	D	43,840		Conductor Hardware
39942	1/26/83	Sowa & Sons	D	D	43,365		Conductor Hardware
11185	4/1/83	S & C Electric	D	D	72,114		Fuse Units
11374	7/29/83	NGK Locke	D	D	651,068		Insulators
39952	12/21/82	NGK Locke	D	D	178,560		Insulators
39795	12/21/82	Lapp Insulators	D	D	68,400		Insulators
39633	6/1/84	ASEA, Inc.	F Sweden	F		181,798	Reactors
11669	8/5/83	Wes End Welding Fab.	D	D	62,090		Tower Steel
39749	1/28/83	Seattle Western Industries	D	D	29,872		Tower Steel
37909	10/28/82	Oregon Machine Erectors	D	D	32,000		Tower Steel
11381	9/30/83	Bethlehem Steel	D	D	117,269		Tower Steel
11121	9/29/83	Anchor Metals	D & F	D & F	9,329,207	3,925,430	Tower Steel
39735	11/30/82	Anchor Metals	D	D	246,988		Tower Steel
12805	9/29/83	Great Western Steel	D	D	500,584		Tower Steel
11120	5/27/83	Nissho-Iwai	F Japan	F		737,759	Tower Steel
11381	9/30/83	Bethlehem Steel	D	D	176,930		Tower Steel
39545	11/4/82	Far West Steel	D	D	31,648		Tower Steel
39632	10/14/82	Great Western Steel	D	D	84,350		Tower Steel
39272	10/20/82	LaGrand Steel	D	D	25,785		Tower Steel
11373	6/23/83	Willamette Mfg.	D	F		87,595	Tower Steel
13046	9/29/83	Willamette Mfg.	D	D	795,752		Tower Steel
11785	7/7/83	Westinghouse	D	D	654,075		Transformers
36424	11/18/82	Westinghouse	D	D	1,348,199		Transformers
12881	7/8/83	Square D	D	D	36,740		Transformers
39981	2/3/83	Cogenel	F France	F		317,625	Transformers
39204	1/14/83	Hevi Duty Electric	D	D	322,393		Transformers
39649	3/11/83	General Electric	D	D	335,212		Transformers
39810	4/4/83	McGraw-Edison	D	D	651,100		Transformers
39818	5/19/83	H.K. Porter	D	D	455,208		Transformers
11900	4/5/83	General Electric	D	D	3,052,386		Transformers
		TOTAL			19,712,691	7,310,207	

FY 84

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
13675	12/23/83	General Electric	D	D	115,186		Capacitors
11298	1/17/84	Westinghouse	D	D	15,228,305		Capacitors
12723	10/13/83	ALCOA	D	D	95,007		Conductor
14063	2/16/84	Kaiser Alum. & Chem.	D	D	117,392		Conductor
12714	11/25/83	ALCOA	D	D	20,269,547		Conductor
12741	11/25/83	ALCOA	D	D	5,221,006		Conductor
12716	10/17/83	Davis Walker	D	D	398,652		Conductor
14848	11/10/83	Reynolds Metals	D	D	9,846,578		Conductor
16598	6/11/84	Rome Cable Corp.	D	D	107,000		Conductor
13852	12/20/83	Fargo Mfg.	D	D	107,581		Conductor
13045	10/31/83	ALCOA	D	D	32,883		Conductor Hardware
12728	10/14/83	Anderson Forge	D	D	254,320		Conductor Hardware
14549	10/14/83	Lindsey Mfg.	D	D	40,132		Conductor Hardware
14550	10/14/83	Schmitt Forge	D	D	165,698		Conductor Hardware
12757	12/23/83	High Voltage Breakers	F Japan	F		6,624,957	Gas Insulated Substation
12715	11/23/83	NGK Locke	D	D	3,767,408		Insulator
14990	11/25/83	Italisolatori	F Italy	F		1,109,014	Insulator
13043	11/22/83	Sediver	D	D	311,321		Insulator
14438	2/24/84	Lapp Insulator	D	D	206,205		Insulator
16784	9/20/84	NGK Locke	D	D	108,327		Insulator
24518	8/22/84	Reliable Electric	D	D	92,000		Insulator
13043	12/6/83	Sediver	D	D	451,059		Insulator
11957	10/25/83	ASEA, Inc.	F Sweden	F		3,079,030	Reactors
14720	6/8/84	Siemens-Allis	D	D	481,210		Reactors
33106	3/31/82	Westinghouse	D	D	152,779		Reactors
15297	12/20/83	General Electric	D	D	372,774		Relays
14067	1/18/84	Anchor Metals	D	D	152,683		Tower Steel
15313	5/23/84	Willamette Mfg.	D	D	39,205		Tower Steel
14461	1/24/84	CE American Pole	D	D	771,332		Tower Steel
14871	12/7/83	Sumitomo Corp.	F Japan	F		31,541	Tower Steel
14353	2/1/84	Union Metal	D	D	130,094		Tower Steel
15579	2/10/84	Valmont	D	D	127,229		Tower Steel
16010	2/10/84	ITT Meyers Ind.	D	D	25,286		Tower Steel
14461	1/19/84	Anchor Metals	D	D	104,529		Tower Steel
14052	1/16/84	Willamette Mfg.	D	D	44,889		Tower Steel
15250	7/2/84	General Electric	D	D	208,029		Transformers
16187	7/2/84	General Electric	D	D	1,976,264		Transformers
17483	8/16/84	Balteau Standard	D	D	39,822		Transformers
18926	8/16/84	Emile-Haefely	F Germany	F		113,280	Transformers
		TOTAL			61,561,732	10,957,822	

Bonneville Power Administration

FY 85

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
21180	1/15/85	Westinghouse	D	D	314,100		Capacitors
22766	8/9/85	Westinghouse	D	D	2,306,694		Capacitors
22130	5/15/85	Westinghouse	D	D	730,500		Capacitors
23187	8/27/85	Brown Boveri	F Switzerland	D	275,000		Circuit Breakers
21896	5/20/85	TRW Palnut	D	D	42,725		Condcutor Hardware
20823	3/18/85	JARL Extrusions	D	D	43,110		Conductor
19310	10/26/84	ALCOA	D	D	70,830		Conductor
21983	6/13/85	Kaiser Aluminum	D	D	3,072,254		Conductor
22123	5/10/85	ALCOA	D	D	406,193		Conductor
21995	4/18/85	Davis Walker	D	D	73,980		Conductor
23385	9/12/85	Reynolds Metals	D	D	50,598		Conductor
21991	4/10/85	ALCOA	D	D	33,795		Conductor
23873	8/21/85	ALCOA	D	D	40,712		Conductor
22425	6/21/85	West Wire	D	D	96,750		Conductor
23969	5/15/85	Lindsey Mfg.	D	D	55,707		Conductor Hardware
23967	5/15/85	Schmitt Forge	D	D	48,911		Conductor Hardware
22111	8/1/85	Brown Boveri Corp.	F Switzerland	F		1,667,607	Gas Insulated Substation
16784	9/20/84	NGK Locke	D	D	123,177		Insulator
21989	5/19/85	NGK Locke	D	D	163,200		Insulator
23351	12/15/85	Lapp Insulator	D	D	58,266		Insulator
19027	10/16/84	Lapp Insulator	D	D	106,980		Insulator
24374	9/19/85	Sediver	D	D	39,560		Insulator
23847	9/20/85	Sediver	D	D	61,140		Insulator
24518	8/16/85	Reliable Electric	D	D	92,000		Insulator
20037	12/7/84	Potter & Brumfield	D	D	130,199		Relays
21895	8/12/85	Modulus Corp.	D	D	93,986		Tower Steel
18790	1/16/85	Anchor metals	D	D	3,691,014		Tower Steel
20759	4/14/85	ITT Meyers Ind.	D	D	81,450		Tower Steel
20394	1/7/85	ITT Meyers Ind.	D	D	33,162		Tower Steel
20759	5/1/85	ITT Meyers Ind.	D	D	81,450		Tower Steel
21068	2/22/85	Willamette Mfg.	D	D	320,875		Tower Steel
23455	9/26/85	Willamecte Mfg.	D	D	41,881		Tower Steel
24040	5/17/85	Square D	D	D	37,500		Transformers
19589	12/13/84	ASEA, Inc.	F Sweden	F		404,745	Transformers
23272	7/26/85	Trench	F Canada	F		287,235	Transformers
		TOTAL			12,817,699	2,359,587	

FY 86

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
60454	2/6/86	JARL Extrusions	D	D	41,520		Conductor
60272	1/10/86	Cressona	D	D	28,538		Conductor
61644	1/14/86	Schmitt Forge	D	D	57,168		Conductor
19861	10/11/85	Brown Boveri Corp.	F Switzerland	D	52,574,400		HVDC Expansion
60467	1/23/86	Lapp Insulator	D	D	88,000		Insulator
60293	1/9/86	NGK Locke	D	D	534,760		Insulator
60683	2/15/86	Union Metal	D	D	26,250		Tower Steel
62039	2/11/86	AC Industries, Inc.	D	D	74,745		Tower Steel
61685	3/20/86	AC Industries	D	D	125,910		Tower Steel
60198	10/11/85	Balteau Standard	D	D	62,000		Transformers
61216	1/3/86	Westinghouse	D	D	2,841,300		Transformers
		TOTAL			56,454,591		

Mr. CONTE. How much equipment does Bonneville expect to procure from FY 1986 to FY 1989?

Mr. JOHNSON. In fiscal year 1986 to date, we have spent $56.5 million for power system apparatus, 100 percent of which went to domestically certified firms.

In Fiscal Year 1985, we purchased domestically-certified end-products amounting to 87 percent, approximately $25 million, of our total expenditures.

I will have to answer for the record the actual amount estimated for this entire fiscal year. I will be happy to do that.

[The information follows:]

PLANNED PROCUREMENTS

Remaining Fiscal Year 1986 Planned Procurements

		QTY	ESTIMATE ($)
* Shunt Capacitors	(115 KV)	1	65,000
	(230 KV)	2	1,750,000
* Power Circuit Breakers	(500 KV)	3	1,100,000
* Reactors	(230 KV)	1	510,000
	(550 KV)	1	460,000
* Transformers	(525 KV)	1	1,600,000
* Conductor			125,000
* Tower Steel			26,000
* Relays			2,300,000
			7,936,000

Fiscal Year 1987 Planned Procurements

		QTY	ESTIMATE ($)
* Shunt Capacitors	(500 KV-600 MVAR)	1	2,500,000
* Series Capacitors	(500 MV)	2	3,732,750
* Transformer	(200 KVA)	1	200,000
* Power Circuit Breakers		9	3,206,000
* Disconnects	(500 KV)	20	640,000
* Insulator			930,000
* Conductor			2,110,000
* Tower Steel			358,000
* Reactor	(550 KV) (Thyrister Controlled)	1	2,000,000
* Relays			900,000
			16,576,750

Fiscal Year 1988 Planned Procurements

		QTY	ESTIMATE ($)
* Disconnects	(500 KV)	20	640,000
* Series Capacitors		4	9,600,000
* Power Circuit Breakers	(500 KV)	13	4,550,000
* Transformers	(300+100 MVA)	2	1,500,000
* Tower Steel			492,000
* Conductor			181,000
* Conductor Hardware			80,000
* Relays			600,000
			17,643,000

Fiscal Year 1989 Planned Procurements

		QTY	ESTIMATE ($)
* Gas Insulated Substation		1	2,000,000
* Shunt Capacitors	(500 KV-200 MVAR)	2	1,840,000
* Power Circuit Breakers	(500 KV)	3	1,050,000
* Disconnects	(500 KV)	3	90,000
* Relays			600,000
			5,586,000

Mr. **Conte**. In both of the years, 1985 and 1986, how much of the procurements are from domestic sources?

Mr. **Johnson**. I will have to answer that for the record. I do not have a breakdown behind each individual procurement.

[The information follows:]

SUMMARY OF FOREIGN AND DOMESTIC EHV ACQUISITIONS

Fiscal year	Domestic	Foreign	Total
1985	$12,817,699	$2,359,587	$15,177,285
1986	56,454,591		56,454,591

Mr. **Conte**. Mr. Johnson, I know you share my concern over the viability of U.S. electrical manufacturing, and I especially appreciate your efforts to provide an environment where U. S. manufacturers can test and develop innovative technologies in the Bonneville system.

Do you agree with me that it is important for a variety of reasons, including national security, to have this industrial base and have a domestic electrical manufacturer?

Mr. **Johnson**. Yes, I do, sir.

And we have made that proposal to General Electric to use our system to advance their state of the art grasp of hydro, particularly DC transmission technology. And that commitment will remain.

Mr. **Conte**. Mr. Clagett, it is good to see you again. I am sure that Mrs. Smith has asked you about our joint interest in the Sydney, Nebraska Project. I would like to ask how things are going with the Miles City Project? Are you satisfied with the performance of the project? Who has been the contractor on that project?

Mr. **Clagett**. General Electric is the contractor. The project was completed on time and within budget, and we are very pleased with the operation. We energized it last November and it has operated fine ever since. There have been one or two bugs to work out that are common when you have a complicated piece of equipment, but it is certainly well within what we hoped for.

EHV EQUIPMENT ACQUISITION

Mr. **Conte**. How much EHV equipment does Western Area Power Administration expect to buy in Fiscal 1986?

Mr. **Clagett**. In FY 1986, about $16.4 million.

Mr. **Conte**. Mr Clagett, have you had any difficulty implementing the Buy American differential under last year's appropriations bill?

Mr. **Clagett**. We have not yet purchased any equipment under it, so I cannot say we have had any trouble implementing it, but we do have the procedures and we anticipate absolutely no problem.

Mr. **Conte**. Thank you very much.

Will you, Mr. Clagett, and, in fact, all PMA Administrators provide for the record a listing of the procurements undertaken or expected to be undertaken in Fiscal Year 1986 for EHV equipment as defined in last year's Energy and Water Conference Report? Also provide estimates of such procurements for FY 1987 to FY 1989?

Mr. CLAGETT. We will provide that for the record.

[The information follows:]

PLANNED PROCUREMENTS OF EHV EQUIPMENT

The Alaska, Southeastern and Southwestern Power Administrations have not purchased any extra high voltage equipment thus far in FY 1986 and have no planned procurements for any extra high voltage equipment through 1989. The Western Area Power Administration and the Bonneville Power Administration plan the following EHV procurements:

PLANNED PROCUREMENTS--WESTERN AREA POWER ADMINISTRATION

(in thousands of dollars)

Type of Equipment	FY 1986	FY 1987	FY 1988	FY 1989
Transformers	10,000	0	18,200*	0
Series Capacitor Banks	0	2,500	16,500*	0
Power Circuit Breakers	0	1,000	4,800*	750
Relays	0	40	80	650*
Tapered Tubular Steel Structures or Structural Units	6,400	7,400	5,500	4,800
Total	16,400	10,940	45,080	6,200

*The majority of these amounts are associated with planned purchases for the California-Oregon transmission project and would be upfront funded by participants.

PLANNED PROCUREMENTS--BONNEVILLE POWER ADMINISTRATION

Remaining Fiscal Year 1986 Planned Procurements

		QTY	ESTIMATE ($)
* Shunt Capacitors	(115 KV)	1	65,000
	(230 KV)	2	1,750,000
* Power Circuit Breakers	(500 KV)	3	1,100,000
* Reactors,	(230 KV)	1	510,000
	(550 KV)	1	460,000
* Transformers	(525 KV)	1	1,600,000
* Conductor			125,000
* Tower Steel			26,000
* Relays			2,300,000
			7,936,000

Fiscal Year 1987 Planned Procurements

* Shunt Capacitors	(500 KV-600 MVAR)	1	2,500,000
* Series Capacitors	(500 MV)	2	3,732,750
* Transformer	(200 KVA)	1	200,000
* Power Circuit Breakers		9	3,206,000
* Disconnects	(500 KV)	20	640,000
* Insulator			930,000
* Conductor			2,110,000
* Tower Steel			358,000
* Reactor	(550 KV) (Thyrister Controlled)	1	2,000,000
* Relays			900,000
			16,576,750

Fiscal Year 1988 Planned Procurements

* Disconnects	(500 KV)	20	640,000
* Series Capacitors		4	9,600,000
* Power Circuit Breakers	(500 KV)	13	4,550,000
* Transformers	(300+100 MVA)	2	1,500,000
* Tower Steel			492,000
* Conductor			181,000
* Conductor Hardware			80,000
* Relays			600,000
			17,643,000

Fiscal Year 1989 Planned Procurements

* Gas Insulated Substation		1	2,000,000
* Shunt Capacitors	(500 KV-200 MVAR)	2	1,840,000
* Power Circuit Breakers	(500 KV)	3	1,050,000
* Disconnects	(500 KV)	3	90,000
* Relays			600,000
			5,586,000

Mr. **Conte**. Thank you, Mr. Chairman. I have some other questions which I will submit for the record.

Mr. **Bevill**. The Chair recognizes Mr. Rudd.

Mr. **Rudd**. Thank you, Mr. Chairman.

I am very interested in the total testimony that you have provided this morning. It is all very enlightening and most valuable. I have to make a response to my friend and colleague, Congressman Myers, to reassure him that his presence here is vitally needed. And, although he may not have a special interest like the rest of us may have, we are very grateful that he is aboard the Committee. I think this Committee is probably the most important Committee that he could serve on.

Energy is vital to our life, our life style and everything else. Can you imagine what would happen in this country if overnight, we did not have energy. We would have 99 percent unemployment. Our industrial nation would fast try to become an agricultural nation totally. Just look at the excitement we have here.

Mr. **Myers**. Would you yield?

I thank you for the compliment, and also Mr. Johnson's earlier compliment of the contribution I make. Even though I do not have a provincial nor a parochial interest directly, I certainly appreciate the kind words you said. But let me ask you, if this is all true, why are you leaving?

Mr. **Rudd**. Well, you know, everyone has their own priorities.

[Laughter]

Mr. **Rudd**. I would hope that yours might be to run for President. You have the ability to do that.

Mr. **Myers**. And I thought he was my friend.

Mr. **Rudd**. Your presence here on this Committee has been very valuable to it, and I do appreciate it.

Mr. **Myers**. Thank you.

Mr. **Rudd**. Thank you for your wisdom also. And the things that you do, and the fact you did have a lot to do with my being on this Committee.

Talking about privatization, it is all complicated. It would be a monumental task if it is carried out. One of the questions raised concern over contracts because they are long-term contracts. Nothing is done in a commercial or business way in this country without reasonable men being involved. Those contracts, I would assume, could be carried out and transferred and maintained and executed the way they were intended. I would hope that some of those reasonable men would be lawyers. That might not be possible.

In any case, Mr. Clagett, I want to express my deep appreciation to you for the effort that you have made with the State of Arizona. You have worked diligently to see that these things are carried out in a reasonable way and I want to express my appreciation.

TAX-EXEMPT BONDING

At the same time, I want to ask you to excise that same wisdom in solving another monumental problem. The tax legislation being developed proposes to eliminate tax-exempt bonding. The Administration's interest in having up-front funding for projects puts us all in a Catch 22 position. Of course, that is simply that we cannot provide up-front funding. I want to tell you that Arizona has come forward almost before anybody else to meet the desires of the Administration. But we cannot produce that without tax-exempt bonding. There is just no way to do it. I hope you will be diligent in your efforts to help us in this matter in any way that you can to be sure that tax-exempt bonding will not apply at least to our project in the future. I hope you agree with that. Do you?

Mr. CLAGETT. I thought you were going to refer to the Mead-Phoenix transmission line, in which we are participating.

Mr. RUDD. I was going to refer to that in a minute or two.

Mr. CLAGETT. I am afraid I am kind of missing what it is that you are driving at, Congressman.

Mr. RUDD. What I am driving at, as you understand better than almost anyone else, is that if we are going to have up-front funding, we must have tax-exempt bonding. But the tax legislation wipes it out, and we are not going to be able to provide up-front funding.

I hope that you will recognize that and help us with it in all of the ways that you can. I hope you will agree that that will be necessary. This might put you crosswise with the Administration. But I hope you will see the reasonableness of what I am talking about.

Mr. CLAGETT. I think a reference here for many of the other people that are here might be helpful. The Hoover Act, which passed in 1984, anticipated considerable non-federal up front funding, and it contemplated or expected tax-exempt financing to be available. There are literally hundreds of millions of dollars involved in carrying out that Act, which anticipated tax-exempt funding. Obviously, we will be as cooperative as we can in pursuing that.

MEAD-PHOENIX DC INTERTIE

Mr. RUDD. Well, in any case, thank you for what you have done or have been doing. I do think you have done a good job with regard to that Mead-Phoenix intertie, which was absolutely necessary. What is the status of that, and what is that project going to do to rates?

Mr. CLAGETT. That particular feature, which is one of those moneymakers that you like to have in the system, is not expected to raise our rates. We are a participant in that project for less than 20 percent.

Mr. RUDD. Twenty percent of what?

Mr. CLAGETT. The Western Area Power Administration would participate less than 20 percent of the line capacity, but the total cost of the Mead-Phoenix line will be borne by the non-federal participants.

In addition to the financing question, there are several economical questions that still have not been answered. In the next two or three weeks, I hope that everyone sees a resolution of some of those other issues. If they are not resolved, it will not matter whether we have tax-exempt financing or not.

Mr. RUDD. Do you want to elaborate on that just a minute?

Mr. CLAGETT. I probably told you more than I know already.

Mr. **Rudd**. In the interest of time, could you give me a written statement on that?

Mr. **Clagett**. Yes, I would be glad to.

[The information follows:]

Mead-Phoenix DC Intertie

STATUS REPORT

The Mead-Phoenix DC Intertie is a joint participation electrical transmission project involving thirteen municipal, state and Federal utility interests in the states of Arizona, Nevada and California. The proposed project connects the Phoenix area to the Western Area Power Administration's (Western) Mead Substation via a 215-mile transmission line. The line is interconnected at Mead with the Mead-Adelanto DC Intertie, an associated facility. Western's share of the construction cost in the Mead-Phoenix Project (approximately 20%) is to be funded by tax exempt bonds to be marketed by the consortium of municipal participants in southern California. Western's share of the construction cost in the Mead-Adelanto Project (presently 15%) will also be financed by a municipal bond sale if tax law permits, subject to the negotiation of the necessary contractual arrangements, or through the appropriations process if the preferred arrangement is unworkable.

Various considerations require resolution by the project participants in order to proceed with the project on a timely basis. Each of the project participants are evaluating the various factors that impact their planning decisions in an effort to be in a position to commit on a schedule and in the capacity amounts that suits their respective needs. Some of the factors that must be considered are the changing load and resource picture, the volatile crude oil marketplace, and general uncertainty in the electrical utility industry. Additionally, third parties have indicated an interest in capacity in the projects that could modify the final rating of the projects.

Further, the interconnection of the project to the AC electrical system in the Adelanto vicinity is the pacing issue over which the project has limited control. This matter is being pursued by the Mead-Adelanto Project Manager and progress is expected in the near future.

Finally, the tax legislation presently before the Congress is a major concern as it may jeopardize the financial arrangements negotiated and agreed to in June, 1982. The reduction in the percentage benefit to nonexempt entities in a municipal bond sale from 25% to some smaller number is a threat to these and future projects.

The overall interest in the project remains strong, although some slippage in the construction commitment schedule should be expected, which is not unusual for a large project involving many entities.

Mr. **Rudd**. I would appreciate it very much. Is the intertie on standby? Where does it stand?

Mr. **Clagett**. Well, the Mead-Phoenix Intertie still looks very promising. There are some questions that need to be answered. So far nothing has happened that would upset the schedule that was contemplated, but there are still questions that need to be resolved. That is a normal progression of a multi-party joint construction project.

Mr. **Rudd**. Is there a date certain?

Mr. **Clagett**. Assuming that problems associated with tax free bonding for the project can be resolved, construction commitments are anticipated early in 1987, with in-service scheduled for 1991.

Mr. **Rudd**. Thank you. I do have some other questions, but I will put them in the record.

Mr. **Fazio**. Thank you, Mr. Rudd. Mr. Dicks.

Mr. **Dicks**. Thank you, Mr. Fazio. I appreciate the Committee's tolerance in allowing me to be here today.

I want to say a welcome to this panel, particularly to Peter Johnson from Bonneville Power Administration. I think he has done an outstanding job, and I understand he has received a great deal of praise here today for the work that he has done during his term of office. He has brought up to an appropriate level the repayment that has been at issue with this Committee. When I served here a few years ago, it certainly was a question, and I think you have done an outstanding job.

I know some of this has been covered, but is it not true that your FY 1985 amortization payment was the largest such amortization payment in the history of BPA?

BONNEVILLE PAYMENTS TO TREASURY

Mr. Johnson. Yes, that is correct. And as I reported earlier, not only in 1985 did we make all of our payments to the United States Treasury, as required by law and policy, but we did also in 1984, and it is our expectation that now, in 1986, we will once again meet all of our obligations to the Treasury.

Mr. Dicks. So, under current law, you are paying every dime that is required?

Mr. Johnson. That is correct.

Mr. Dicks. I think that is very important to understand, because someone has suggested that in the Northwest, we are not living up to our obligations, and I think that is probably the hallmark of your term in office. You really have gotten that straightened out, and we are paying back on the schedule that is required. Is that not correct?

Mr. Johnson. That is correct. Our amortization payment in 1985 was $237 million, and that is clearly the largest amortization payment ever made by Bonneville.

REPAYMENT REFORM

Mr. Dicks. I trust that you have looked at the Administration's plan for placing BPA on a fixed straight line repayment schedule. What is your preliminary assessment of the impact of that on the Pacific Northwest in terms of rates and the general economy? We have been in a very serious recession, as you know.

Mr. Johnson. It is estimated that the 50-year straight line amortization requirement would increase Bonneville's priority firm rate something in the range of 6 to 9 percent. But, as I reported in response to earlier questions, Congressman Dicks, we are presently suffering a short fall in our projected revenues from the sale of non-firm power outside the region, particularly in California, because of falling gas and oil prices.

Mr. Dicks. Right.

Mr. Johnson. The utilities in that market can utilize alternative fuels, such as gas. If this continues into this next fiscal year, 1987, we will have to give serious consideration to initiating a rate case that could result in a rate increase for that reason alone of between 10 and 15 percent.

I cannot predict with any certainty what impact that might have on our aluminum loads which, as you know, are very fragile anyway. A 6 to 9 percent rate increase is estimated to be required to meet the modified repayment obligation of an additional $140 million in FY 1987. This increase would be on top of any other adjustments that might have to be made because of the realities we are dealing with in the markets we serve.

Mr. DICKS. In your personal and professional opinion, has the Northwest fully recovered from the recent economic recession?

Mr. JOHNSON. Perhaps some businesses have, but, certainly, the aluminum industry has not, nor has the forest products industry nor has mining. The economy in the Pacific Northwest in general remains, I think, behind the rest of the Nation in terms of recovering from the recent recession.

Mr. DICKS. In your personal and professional judgment, do you believe that the industries that you have mentioned would be adversely affected by the increase in rates that will be required if the Administration's plan is placed into effect? It certainly is not going to help.

Mr. JOHNSON. No, it is not going to help.

Mr. DICKS. Is it possible that the negative impacts of the proposal, such as increased unemployment and bankruptcies, could equal or exceed this proposed benefit? In other words, if we put these rates up to a higher level, and it forces the aluminum industry to shut down as well as many of the timber companies, that is not going to help Bonneville. When you talk about remedying short falls, this is the kind of problem we have. If we are going to solve the economic problems, we have got to have revenues. If you are going to pay back on this very ambitious schedule you set for yourself, you have got to have revenues. And what I am worried about is doing this on top of everything else that has happened to us. Is it not true that our rates have increased by 500 percent in the last four or five years?

Mr. JOHNSON. Yes, our wholesale rates to public bodies have increased 500 percent since 1979.

Mr. DICKS. So this would come on top of that. And it seems to me that we have to take a very careful look at what this could do to your revenues. It could have a negative impact on your revenues, could it not?

Mr. JOHNSON. Yes, that is true.

Mr. DICKS. What is the life expectancy of the projects that are part of BPA's hydro system?

Mr. JOHNSON. It varies by the project, and by the various components within each project.

Mr. DICKS. What is the 50-year figure for the Administration's proposal? Where does the 50-year figure come from?

Mr. JOHNSON. It rises out of legislative history and administrative practices under the Department of Energy. Hydro resources are to be paid back over a period of 50 years or the useful life, whichever is less.

Mr. DICKS. Do you think there ought to be some flexibility in the question of the time frame for the repayment? In other words, if we are going to look at this proposal, should not flexibility be built into part of the equation?

Mr. JOHNSON. Certainly, we should reserve the flexibilities that Bonneville has at the present time. We cannot utilize a contingency. We are to price our power at cost. So, when we suffer from low water, which occurred in the late 1970's, we run short of revenues and there has to be a means by which the administrator has the flexibility to deal with this. Yes, we need flexibility in the repayment system in the future to maintain the repayment schedule currently enjoy.

Mr. DICKS. If the Administration's plan were to be approved, what do you think would be a reasonable pay back period?

Mr. JOHNSON. (Hesitating)

Mr. DICKS. If you want to put that in the record, fine.

Mr. JOHNSON. I think that would be better.

Mr. DICKS. Think about it.

[Laughter.]

Mr. FAZIO. Do you want to withdraw your question?

REPAYMENT REFORM LEGISLATION

Mr. DICKS. We will think about that.

I would like to put this question both to Mr. Johnson and to Secretary Fitzpatrick. It is my understanding that the Secretary of Energy has given a personal assurance in his confirmation hearings that the Administration would not seek to implement changes in the repayment schedule administratively; that they would seek a legislative change.

Secretary Fitzpatrick, is that your understanding of the Administration's policy?

Miss FITZPATRICK. Yes, it is, Mr. Dicks.

Mr. DICKS. Mr. Johnson, is that your understanding of the Administration's policy?

Mr. JOHNSON. I defer to Madam Secretary.

[Laughter.]

SITE "C" PROJECT

Mr. DICKS. I think I will leave that one alone.

Mr. Johnson, could you give us a brief summary of your discussions with British Columbia on the Site "C" project? As you know, we have been trying to negotiate with the Canadians on trade and timber and fish questions for quite sometime with a notable lack of success. Tell me about this project. Give me your views on it, would you, please?

Mr. JOHNSON. Yes. In August of this last year, Premier Bennett, the Premier of British Columbia, announced at the dedication of a dam in the province that his Administration desired to move forward with the construction ahead of need of a certain Site "C" hydroelectric dam on the Peace River. This dam could produce about 500 average annual megawatts of energy and could have 900,000 average megawatts of capacity. Premier Bennet said B.C. desired to market that power in the United States, the State of California and also the Pacific Northwest.

We immediately responded in writing to him, not only Bonneville, but all Northwest utilities, that we were desirous of developing low cost power that we would like to take a look at it.

We have had many discussions since that time. I feel that Bonneville, as the steward of the Federal investment in the Northwest intertie, has to decide the need of the region; the utility requirements within the four Northwest States. Then we must address the broader spectrum. We have to think, to the highest degree possible, and act on a one utility basis. So we cannot ignore the interests of California.

Mr. DICKS. Especially when Mr. Fazio is in the Chair.

Mr. JOHNSON. You bet. And we certainly cannot ignore the interests of our friends to the North and in Canada. We have a long-established relationship of very mutually beneficial transactions with British Columbia. And, in this last year, British Columbia was successful in exporting to the United States through the first nine months of their most recent fiscal year, which ended December 31, 1985, $218 million of surplus energy, which is three times what they exported just three years before. They have sold all of the surplus they developed on their system. What is more, they have purchased power in Alberta Province, wheeled it across British Columbia into the Pacific Northwest. So we are pleased with this result, and that has been largely because of the efforts of Bonneville and our schedulers to make sure that Canada was able to sell their surpluses because that is a benefit not only to them but to ourselves as well.

Mr. DICKS. This is going to take a long time. This project is not going to happen instantly, is it?

Mr. JOHNSON. That is correct. It will turn on a number of processes that first have to be completed. One is our long-term intertie access policy in the Pacific Northwest, which is currently under development. Another is the completion of all NEPA requirements and compliance with environmental law. It is contemplated that this will be completed at the end of the year and then we will have to look specifically at the resource, again under NEPA, which might take until the fall of 1987 before we would be able to address the issue of providing firm access for a sale, say, between British Columbia and Northwest utilities and British Columbia and California utilities. So it could not be until sometime after that when it would seem prudent that construction could start, maybe the beginning of 1988. And then B.C. Hydro is estimating six or seven years after that before it will be completed.

FUTURE RESOURCE DECISIONS

Mr. DICKS. Some people are concerned that going forward with this project will reduce the ability, if there is any prospect, to finish 1 and 3. We have invested so much money in those two plants already. Some have suggested that, when you figure out how much it is going to cost to finish those, that that is really the best resource for the Northwest. What is your view of that, and you can expand in the record?

Mr. JOHNSON. We look upon the two preserved nuclear facilities of the supply system, for which we are paying substantial amounts at the present time, as a viable resource that is available to the Administrator to compete in the future to meet load. But I am required by the Northwest Power Act to seek, when needed, the least cost resource to meet that load. I have to look at conservation, which we are preparing to do. We have to look at renewable resources. I am also instructed under the Act to look at extra-regional resources, those that might be developed outside the region that might compete on a cost-effective basis with resources within the region.

So, I would proceed, I would say, blind to the particular kind of resource. I would seek, first, to determine the need and, second, determine if it is cost-effective. Then I would be discharging my obligation to the affairs of the Pacific Northwest and California.

It is contemplated that the Canadian resource could be sold to a number of utilities. And the only thing that has been discussed seriously in Bonneville is the possibility of an option that we might avail ourselves of in the future.

But, even then, the option would be only for a small portion, or, put it this way, a major portion, yet to be determined, of the output of that particular resource. So, whether it would, in fact, compete with the restart directly of Supply System Units 1 and 3, is somewhat problemmatical. I do not think it will displace them because it is not a big enough resource in and of itself.

Mr. DICKS. I have a few other questions.

Mr. FAZIO. Would you yield at this point?

Mr. DICKS. Sure

MANITOBA HYDRO PROJECT

Mr. FAZIO. I wonder if Mr. Clagett could tell us what WAPA is doing in terms of developing energy in Canada?

Mr. CLAGETT. We are working with Manitoba Hydro. We have been pursuing it for several years. We expect in the next few weeks that we will have a fairly well defined proposal from Manitoba for about 1200 megawatts

Mr. FAZIO. How do you get that power to your grid?

Mr. CLAGETT. It would require about $700 million worth of new transmission line, about a third of which will be in the United States. The power would come into the system, probably, through North Dakota. It is on the other side of east-west ties. It is a long way from a big part of our system.

Mr. FAZIO. If you wanted to get Canadian power to the west side of the Continental Divide, how would you envision doing it?

Mr. CLAGETT. How would I do it? If you are talking about a small quantity, 50 or 100 megawatts, in 1995, it is conceivable that there will be transmission capacity available. If you are talking about any significant quantity, then we have a myriad of other problems that would have to be reviewed, based on resources and loads at that time. We are talking about 1995 or later for the first delivery. Conditions between now and then are going to change.

Mr. FAZIO. I am thinking in terms of, if you brought your Manitoba power in, would you want to sell it in the Midwest.

Mr. CLAGETT. Probably, in North Dakota and South Dakota.

Mr. FAZIO. I am looking to try to find out what kind of an interrelationship we need to have with Bonneville if we want to bring power in from Canada. Do we have the ability to bring power through the Bonneville system to independently deliver to WAPA customers?

Mr. CLAGETT. Let me see if I understand what you are saying. If you bring Manitoba power into North Dakota—

Mr. **Fazio**. Canadian power that might be developed somewhere in Canada. It does not necessarily have to be Manitoba

Mr. **Clagett**. Well, it depends a lot on which part of Canada.

Mr. **Fazio**. Natural gas from Alberta down through Washington, Oregon and California.

Mr. **Clagett**. The Canadian transmission system is basically several north-south systems. It depends on how far east you are going. If you are talking about Manitoba power, if you are talking north of North Dakota. North Dakota is a long way from the Pacific Northwest.

Mr. **Dicks**. You would have to have a lot of intertie capability.

Mr. **Clagett**. That is right.

Mr. **Dicks**. That is the biggest problem we have now. The Northwest and California has a lack of intertie.

Mr. **Fazio**. We are remedying that in the short term. The question I have is what are our capabilities, say, in terms of getting British Columbia hydropower to WAPA customers in the Western part of the country, on the Coast? Could we accomplish that with or without Bonneville's assistance? What kind of a future interrelationship do we want to have with Bonneville in that regard?

Mr. **Clagett**. You said British Columbia. Did you mean British Columbia? I do not see how it could go to Northern California without going through Bonneville's system.

INTERTIE ACCESS POLICY

Mr. **Fazio**. Do we have to buy it from Bonneville after they import it from British Columbia, or do we get direct access at rates that are negotiated directly with them?

Mr. **Clagett**. I think you should ask Mr. Johnson.

Mr. **Fazio**. I wanted to ask you, but I will be happy to ask Peter.

Mr. **Johnson**. We are trying to develop an intertie access policy so that we can address not only how we meet the utility requirements of the utility systems within the Northwest, including that of Bonneville, but also how we might benefit if we use an intertie investment for California utility sales, That will be addressed in this long-term access policy. We are anxious to build yet more capacity in the Northwest, like the third AC and the DC up-rate, to make it possible for potential transactions directly between utilities in Canada and California.

Mr. **Fazio**. Would you joint venture with WAPA perhaps on some of these facilities?

Mr. **Johnson**. I think anything could be considered. That has not been discussed precisely, but anything could be considered.

Mr. **Fazio**. Well, obviously, we are interested in getting power, but I think the question of who we get it from, at what rates, and who determines those rates, et cetera, et cetera, becomes important to California customers. I am looking for some involvement in perhaps the development of that power so that we have a better handle on it.

Mr. **Johnson**. Congressman, I think right now that exactly what is happening with respect to this Site "C" resource that Congressman Dicks mentioned, is that we are seeking to provide an environment, the very thing that you asked. California utilities are at the table talking to not only ourselves but to our friends in Canada, and we are seeking to find something with them where we can divide up the benefits and, in fact, accomplish what California and Canada want.

Mr. FAZIO. Go ahead.

DEFEDERALIZATION

Mr. DICKS. Just one final point. I understood that Chairman Bevill made it very clear that he thinks the privatization of the marketing agencies is not going to get his blessing. I just want to say that I believe there is a merging consensus in the Pacific Northwest that privatization is not in the interest of the rate payers of the region. In fact, even other less ambitious approaches, I think, are being questioned at this point in time. I happen to believe that the industries and the people in the Northwest are better served with the system as we have it today. I think the Administration just ought to recognize, in looking at its budget and everything else, that the revenues probably are not going to be there from the sale. I think the Northwest delegation, basically, has come to the consensus after the hearings that have been held before the authorizing Committees, that this is not in the public interest of the rate payers in the Northwest. I just wanted to make that observation because I know the Chairman has talked about it earlier. That is certainly my view.

Mr. FAZIO. Thank you. We asked a number of questions along this line. I can tell you the Budget Committee had hearings in Helena, Montana last Friday, in which representatives of your region were testifying. My interpretation was pretty clear that they were unanimously opposed, even to the concept of the Weaver Bill. They have reached a broad consensus, public, private, across the spectrum of all four States, that this is not a particularly advantageous idea.

Mr. DICKS. There is an old adage, "If it isn't broke, don't fix it." BPA looks pretty good to us in the Northwest.

Mr. FAZIO. Well, somebody might say the Federal Government is broke.

Mr. DICKS. We have got a good balance sheet.

Mr. FAZIO. May we continue sailing on, oh Ship of State.

I guess what I would want to say is it is not simply a matter of regional or parochial interest. If you look at the issue from a broader perspective, you do realize that the Federal Government is the recipient of the policies that you implemented, Madam Secretary. Recipient of the funds it needs to justify the investments into operation and maintenance.

Mr. FAZIO. Do you want to comment?

Miss FITZPATRICK. Yes, Mr. Fazio. I think that all of these points that are being made bring out why we have said we want to pursue this idea in an open discussion, contacting all concerned parties.

The only other point I want to make is that we are looking at each of the five Power Marketing Administrations as a unique entity. It is certainly clear that they are all different. Bonneville presents issues that none of the others do, and vice versa.

It may well be that it is not something that should be defederalized. After study and consideration of the matter, that might not happen, but I think each one of them should be considered on its own merits.

Mr. **Fazio**. Well, we concede when Mr. Geinsinger tells us that his system is different, and Mr. Cross is proud of his unique status. Everybody does need to be looked at individually. I would like to say on behalf of the Committee we appreciate the fact that you took a stand for a legislative process. It is my understanding that OMB was interested in going forward here without legislative authority and that you and others in the Department of Energy indicated that that was not the proper course of action.

You were right, and we appreciate your taking that stand. It certainly would be the feeling of this Committee and I am sure many others that that is the right position.

We may not agree on the solution to this problem, but we want to thank you for understanding our role if there is going to be a change in policy.

We thank you once again for spending a good part of the day with us. It is always nice to see you and all the gentlemen who came along with you today. This is the last hearing on the Department of Energy per se.

We will convene at 10:00 o'clock tomorrow on other business. I have other questions for the record as do other Members.

Thank you.

Miss **Fitzpatrick**. Thank you.

[Questions and answers for the record and the statements previously referred to follow:]

QUESTIONS AND ANSWERS FOR THE RECORD

DEFEDERALIZATION AND RATE REFORM

Mr. Bevill. The FY 1987 budget assumes a change in the procedures for determining rates for the Power Marketing Administrations. The budget also assumes the sale of the Power Marketing Administrations. Is it the position of the Department and the Administration that these actions will not be implemented without the enactment of separate authorizing legislation?

Miss Fitzpatrick. Yes. The Department recognizes that congressional approval will be required prior to sale and that legislation will be proposed to give the Congress an opportunity to review the debt repayment proposal.

Mr. Bevill. What is the status of the Administrations' legislative proposals for both the rate revisions and the sale of the Power Marketing Administrations?

Miss Fitzpatrick. The Department intends to transmit a legislative proposal to the Congress in the near future to modify power marketing repayment procedures. In developing any defederalization proposal, the Department intends to pursue defederalization through an open, competitive process. Task groups will be established to look at all possible options. Before implementation of defederalization, we will seek the views of concerned groups and individuals including congressional delegations, State and local officials, current customers, the financial community, and public power and private sector energy interests.

The Department clearly recognizes that Congressional approval will be required prior to sale. The legislative language ultimately submitted will reflect the Administration sale proposal alternative which best conforms to the guidelines for sale.

PMA SALE REVENUES

Mr. Bevill. What are the anticipated revenues from the sale of each Power Marketing Administration and how was this determined?

Miss Fitzpatrick. The current FY 1987 budget assumption is that the sale price would be the amount of the unpaid Federal investment at the time of sale. We fully recognize the actual sales price and timing of the sale could differ from current projections. Anticipated gross proceeds from the sale are approximately $13.9 billion, assuming completion of the sale of all five Power Marketing Administrations by 1991. The anticipated schedule of revenues from the sale of the PMAs is in a table I would like to insert in the record.

(The information follows:)

REVENUE FROM DEFEDERALIZATION [1] [2]

(In millions of dollars)

Power Marketing Administration	Fiscal Year--					
	1987	1988	1989	1990	1991	Total
Bonneville	--	1,000	1,000	3,425	3,425	8,850
Alaska	--	--	--	174	--	174
Southeastern	--	--	--	--	1,383	1,383
Southwestern	--	800	--	--	--	800
Western Area	--	--	500	2,172	--	2,672
Total	--	1,800	1,500	5,771	4,808	13,879

[1] Based on amount of unpaid Federal investment.

[2] Proceeds from sale of assets do not address foregone revenues.

ECONOMIC ANALYSIS FOR PROPOSED CHANGES

Mr. Bevill. What economic analysis was performed to determine the impact of these changes on the various regions of the country?

Miss Fitzpatrick. In-depth economic analyses of these changes have not been performed. Economic analysis for the defederalization of the PMAs will be developed based on information gathered by the Departmental task groups.

However, we have made preliminary estimates that the PMA wholesale power rates would increase from 0 to 13.5 percent in FY 1987 due to the proposed fixed schedule of repayment. Alaska's would increase by 13.5 percent. Bonneville's would increase between 6 and 9 percent, if implemented in FY 1987. Southeastern's would increase by 10 percent. Southwestern's would increase between 10 and 11 percent. There would be no increase in FY 1987 for Western, but increases would occur in future years. The effect on the retail customer's rates will generally be smaller than the increase in wholesale rates because power purchase costs are averaged with transmission and other costs before determining the retail rates. Moreover, the retail rate impact will be even smaller where utilities only purchase a small portion of their power from the power marketing administrations.

REPAYMENT REFORM

Mr. Bevill. Please provide for the record a table showing, by Power Marketing Administration, the return to the Treasury for interest payments and amortization under the existing repayment process and the proposed repayment plan. Provide this for fiscal years 1986 through 1989. Also, please show the anticipated change in electrical rates charged under each plan.

Miss Fitzpatrick. I would like to insert in the record a table for each PMA showing the return to the treasury for fiscal years 1986 through 1989, of interest payments and amortization under existing and proposed repayment processes. Also submitted for the record is a table showing anticipated power rates for each of the PMAs assuming that legislation revising the repayment methodology was enacted, and the straight line proposal went into effect on October 1, 1986.

(The tables follow:)

REVENUE TO TREASURY

(In millions of dollars)

Alaska Power Administration	FY 1986	FY 1987	FY 1988	FY 1989	TOTAL
Interest: Proposed	3	3	3	4	13
Interest: Existing	3	3	3	3	12
Interest: Difference	0	0	0	1	1
Amortization: Proposed	2	3	3	4	12
Amortization: Existing	2	2	2	3	9
Amortization: Difference	0	1	1	1	3
Subtotal: Interest and Amortization: Proposed	5	6	6	8	25
Subtotal: Interest and Amortization: Existing	5	5	5	6	21
Subtotal: Interest and Amortization: Difference	0	1	1	2	4

REVENUE TO TREASURY

(In millions of dollars)

Bonneville Power Administration	FY 1986	FY 1987	FY 1988	FY 1989	TOTAL
Interest: Proposed	389	394	411	425	1619
Interest: Existing	389	411	426	438	1664
Interest: Difference	0	-17	-15	-13	-45
Amortization: Proposed	191	305	305	356	1157
Amortization: Existing	191	149	175	230	745
Amortization: Difference	0	156	130	126	412
Subtotal: Interest and Amortization: Proposed	580	699	717	781	2777
Subtotal: Interest and Amortization: Existing	580	560	602	668	2410
Subtotal: Interest and Amortization: Difference	0	139	115	113	367

REVENUE TO TREASURY

(In millions of dollars)

Southeastern Power Administration	FY 1986	FY 1987	FY 1988	FY 1989	TOTAL
Interest: Proposed	38	39	39	39	155
Interest: Existing	38	39	39	39	155
Interest: Difference	0	0	0	0	0
Amortization: Proposed	23	35	35	36	129
Amortization: Existing	23	22	22	22	89
Amortization: Difference	0	13	13	14	40
Subtotal: Interest and Amortization: Proposed	61	74	74	75	284
Subtotal: Interest and Amortization: Existing	61	61	61	61	244
Subtotal: Interest and Amortization: Difference	0	13	13	14	40

REVENUE TO TREASURY

(In millions of dollars)

Southwestern Power Administration	FY 1986	FY 1987	FY 1988	FY 1989	TOTAL
Interest: Proposed	21	19	20	20	80
Interest: Existing	21	21	21	20	83
Interest: Difference	0	-2	-1	0	-3
Amortization: Proposed	20	31	31	32	114
Amortization: Existing	20	20	19	18	77
Amortization: Difference	0	11	12	14	37
Subtotal: Interest and Amortization Proposed:	41	50	51	52	194
Subtotal: Interest and Amortization: Existing	41	41	40	38	160
Subtotal: Interest and Amortization: Difference	0	9	11	14	44

REVENUE TO TREASURY

(In millions of dollars)

Western Area Power Administration [1/]	FY 1986	FY 1987	FY 1988	FY 1989	TOTAL
Interest: Proposed	62	53	50	47	212
Interest: Existing	62	81	47	42	232
Interest: Difference	0	-28	3	5	-20
Amortization: Proposed	162	213	216	204	795
Amortization: Existing	162	205	205	191	763
Amortization: Difference	0	8	11	13	32
Subtotal: Interest and Amortization Proposed:	224	266	266	251	1007
Subtotal: Interest and Amortization: Existing:	224	286	252	233	995
Subtotal: Interest and Amortization: Difference	0	-20	14	18	12

[1/] The FY 1987 budget had assumed no impact due to straight line amortization for Western. Above table for WAPA excludes interest differential for CRSP and Pick-Sloan projects resulting from repayment reform.

REVENUE TO TREASURY

(In millions of dollars)

PMA TOTALS	FY 1986	FY 1987	FY 1988	FY 1989	TOTAL
Interest: Proposed	513	508	523	535	2079
Interest: Existing	513	555	536	542	2146
Interest: Difference	0	-47	-13	-7	-67
Amortization: Proposed	398	587	590	632	2207
Amortization: Existing	398	398	423	464	1683
Amortization: Difference	0	139	167	168	524
Total: Interest and Amortization Proposed:	911	1095	1113	1167	4286
Total: Interest and Amortization: Existing	911	953	959	1006	3829
Total: Interest and Amortization: Difference	0	142	154	161	457

ANTICIPATED WHOLESALE POWER RATES
ASSUMING REPAYMENT REFORM EFFECTIVE OCTOBER 1, 1986
(mills per kilowatthour)

	FY 1986	FY 1987		FY 1988		FY 1989	
		Existing Repayment	Repayment Reform	Existing Repayment	Repayment Reform	Existing Repayment	Repayment Reform
Alaska Power Administration							
Snettisham	25	28	32	28	32	28	32
Eklutna	19	19	19	19	19	19	19
Bonneville Power Administration							
Priority Firm Power Rate (PF)	22.2	22.2	24.0 1/	23.3	24.7	24.1	25.5
Industrial Firm Power (IP) Standard Rate 2/	22.8	22.8	22.8	22.8	23.1	23.0	24.4
Surplus Firm Power Rate 3/	29.9	29.9	29.9	31.3	31.3	32.7	32.7
Non Firm Energy Standard Rate (NF) 3/	23.4	23.4	23.4	23.4	23.4	23.4	27.9
Southeastern Power Administration	16.4	17.5	19.2	18.2	20.0	20.0	21.8
Southwestern Power Administration	27.4	27.5	30.5	27.5	31.1	27.5	32.0
Western Area Power Administration: 4/	15.4	16.6	16.6	16.79	17.21	16.72	17.25

1/ Preliminary estimates FY 1987. Assumes that BPA could raise FY 1987 rates if legislation revising the repayment methodology were enacted and the straight-line proposal went into effect on October 1, 1986, and that the entire increase would fall on the PF Rate. It tentatively appears that other rates would not increase in FY 1987 because of a floor rate in effect for the Direct Service Industrial (DSI) customers that keeps the IP rate higher in the near-term than it would be otherwise, and because of market conditions for SP and NF sales. Under existing law, BPA's DSI customers could not be completely sheltered from some rate increases resulting from implementation of this proposal. Under some alternative scenarios, it is possible that an increase could be required if there is a revenue shortfall due to (1) continuing low aluminum prices and (2) the sudden rapid decrease in oil and gas prices, affecting BPA's export markets.

2/ The rate actually paid by aluminum companies will vary from this standard rate as the price of aluminum during the years varies.

3/ Assumes revenues from this customer class are not increased above currently projected levels.

4/ Weighted average of all Western Area Power Adminstration Projects. CRSP and Pick-Sloan interest differential due to repayment reform not included in FY 88 and FY 89 rate evaluation.

PACIFIC NORTHWEST-CALIFORNIA TRANSMISSION LINE

Mr. Bevill. In the FY 1985 Appropriation Bill, approval was provided for the construction of a new 500-kV transmission line from the Pacific Northwest to California. By letter dated February 7, 1985, Secretary Hodel approved a Memorandum of Understanding on the construction of the line subject to certain conditions. Please describe the status of this project.

Miss Fitzpatrick. The plan for constructing a new 500-kV transmission line from southern Oregon to California as described in the Memorandum of Understanding is moving forward. Two recent significant events are the completion of the Project Development Agreement and the allocation of the 3.125 percent of the Project transfer capability that was set aside by the Secretary of Energy in his Memorandum of Decision dated February 7, 1985. I will ask Mr. Clagett and Mr. Johnson to insert a more detailed report in the record.

(The information follows:)

The Project Development Agreement, which provides for up to $27 million for Project development work, was effective retroactive to September 30, 1985, when the last signature was obtained on February 26, 1986. This development work will take the Project to the decision point of whether or not to proceed with construction and covers such items as project management, environmental studies, technical studies, design, and specification preparation.

A good start on the environmental and power system studies work has already been made under the interim funding arrangements. A preliminary plan has been developed and a draft Environmental Impact Statement is expected to be published by November 1986. The projected inservice date of the Project is early 1991. The estimated cost is $430 million excluding system additions or modifications in the Pacific Northwest.

One of the participants has determined that it would have to construct additional facilities in order to meet its wheeling obligations to southern California entities set forth in the Project MOU. The environmental studies are being expanded to address these facilities which will likely delay completion of the environmental work by about 5 months. However, this is not expected to delay the inservice date of the Project.

One of the conditions the Secretary placed on the MOU was to set aside 3.125 percent of the Project transfer capability. This set-aside was to be allocated by Western among non-Federal public entities who were not participants in the original MOU. Western conducted public proceedings and completed the allocations to all eligible applicants on October 22, 1985.

Negotiations have been completed between the original participants and the allottees to bring the allottees into the Project. The document used to achieve this is an agreement called the MOU Annex. The MOU Annex modifies the MOU and the Project Development Agreement to recognize the allottees as additional participants. As of February 22, 1986, all six allottees had signed the MOU Annex and paid their share of Project expenses incurred to date. All participants are expected to sign the MOU Annex in the very near future.

In the Northwest there are three participating utilities: BPA, Pacific Power and Light, and Portland General Electric. These utilities are currently negotiating an agreement to cover rights and obligations on the expanded intertie in the Northwest. A preliminary Northwest plan of service has been completed, with an approximate cost of $130 million. BPA has budgeted $65.8 million toward the project. However, if BPA and the other facility owners are able to make satisfactory arrangements for use of the intertie by other Northwest utilities through subscription, facilities relating to the third AC line may be funded by non-federal participants. Northwest utilities are also participating in the planning process in California.

A Draft Environmental Report on Northwest Reinforcement Actions will be incorporated as an Appendix of the Draft Environmental Impact Statement. Both Northwest and California utilities are participating in the Oregon review Committee established by the State. BPA is also preparing an EIS on Intertie Development and Use which examines resource impacts on the Southwest resulting from planned intertie additions and policies governing use of the Federal Intertie. The IDU-EIS should be released in final form by September 1986.

CUMULATIVE INVESTMENT AND RECEIPTS

Mr. Bevill. Please provide a table showing the cumulative investment for each of the power marketing administrations, the receipts to date and how these receipts have been used to offset operating expenses, to repay interest, investment costs and other purposes.

Miss Fitzpatrick. I would like to insert the following table for the record. It presents the power marketing administrations' cumulative revenues and status of repayment through fiscal year 1985.

[The table follows:]

POWER MARKETING ADMINISTRATIONS

CUMULATIVE REVENUES AND STATUS OF REPAYMENT

AS OF THE END OF FISCAL YEAR 1985 [1]

[In millions of dollars]

Power Administration	Power investment[2/3]	Power receipts	Operating expenses (O&M)	Purchased power	Interest	Repayment through 1985	Unpaid Investment
APA........	131.0	71.0	24.0	2.0	26.0	19.0	112.0
BPA........	8,942.0	13,273.0	2,483.0	6,784.0	3,129.0	877.0	8,065.0
SEPA.......	1,302.7	1,233.9	335.6	147.0	441.2	310.0	992.7
SWPA.......	839.1	1,265.9	353.1	435.6	375.6	101.6	737.5
WAPA.......	4,148.0	6,282.0	2,238.0	1,034.0	1,250.0	1,760.0	2,388.0
PMA total	15,362.8	22,125.8	5,433.7	8,402.6	5,221.8	3,067.6	12,295.2

---

[1] PMA data are on an accrual basis of accounting and are based on the best information available.

[2] The power investment to be repaid includes irrigation investment for BPA and WAPA.

[3] The unpaid investment does not include Construction Work in Progress.

SALE OF ALASKA POWER ADMINISTRATION

Mr. Bevill. What is the status of your continuing discussion concerning the sale of the Alaska Power Administration?

Mr. Cross. Alaska Power Administration and the State of Alaska have undertaken a joint study identifying issues of the proposed sale with input from interested parties. The report will be out in April 1986. We hope to develop a specific sale proposal for consideration by Congress in during 1987.

DEFERRAL

Mr. Bevill. What is the impact of the FY 1986 deferral on the Alaska Power Administration?

Mr. Cross. The deferral results primarily from lower-than-estimated costs of automating our Eklutna Project and from salary savings in FY 1985. The deferral has no adverse impacts on Alaska Power Administration programs.

CONSTRUCTION OF CRATER LAKE

Mr. Bevill. What is the status of the Crater Lake unit of the Snettisham Project?

Mr. Cross. Construction of the Crater Lake unit of the Snettisham Project is progressing well. The main contract is expected to be awarded by the end of May 1986. We anticipate power on line in October 1988, with construction completion by summer of 1989.

PROCUREMENT OF TRANSFORMERS

Mr. Bevill. Describe your requirement to replace transformers at the Snettisham Project.

Mr. Cross. Alaska Power Administration plans to purchase new transformers to replace the existing 25,000 KVA-12,000/120-240 volt PCB-filled generator neutral grounding transformers at the Snettisham Project. These transformers are relatively small, with an estimated replacement cost of $125,000. The existing transformers will be disposed of at an EPA-approved disposal site.

NET BILLING

Mr. Bevill. Please describe the continuing net-billing arrangement with Alaska Electric Light and Power Company to cover cost of non-Federal operations for the Snettisham Project.

Mr. Cross. Alaska Electric Light and Power (AEL&P) provides non-Federal operators for the Snettisham Project at the Thane Substation, which has become the dispatch center for the Juneau area. The cost for non-Federal operators is shared equally by Alaska Power Administration and AEL&P. APA's share is paid through the net-billing arrangement. The net-billing arrangement continues to be a very efficient and economical one.

BPA RATE SETTING

Mr. Bevill. What action must you take before the implementation of revised rates?

Mr. Johnson. Bonneville's power sale contracts require that Bonneville give at least nine months' notice before any rate revision. Also, Section 7(i) of the Pacific Northwest Power Act requires that Bonneville revise rates through an extensive public procedure. The required procedure includes publication of notice of proposed rate revisions in the Federal Register, an opportunity for interested parties to rebut any Bonneville proposal, a public hearings process with cross-examination of all witnesses, a final record of decision based on all materials submitted to the Administrator, and FERC confirmation and approval.

Mr. Bevill. Does the anticipated enactment of legislation meet your schedule for revising rates?

Mr. Johnson. The Federal Energy Regulatory Commission has approved BPA's current system-wide rates, on an interim basis, for the period July 1, 1985 through September 30, 1987. The FY 1987 budget assumes that BPA could raise its FY 1987 rates if legislation revising the repayment methodology were enacted by October 1, 1986.

DEFEDERALIZATION

Mr. Bevill. What impact does the Administration's announced intention to sell the Bonneville Power Administration have on your ability to conduct operations?

Mr. Johnson. We are continuing current operations. Moreover, we find the wide public discussion on the ownership and value of the Bonneville Power Administration to be healthy. It has produced dialogue in which the respective national, regional, and intra-regional interests in the Federal Columbia River Power System can be better understood. Regardless of the outcome of the discussion, we at Bonneville will maintain our commitment to deliver the best value in electric energy services to the region's ratepayers. We must and will carry on our mission.

Mr. Bevill. What preparations are you now making leading toward the sale of Bonneville?

Mr. Johnson. The Department of Energy has established an Asset Divestiture Planning Group in the Office of the Secretary to study and develop proposals to defederalize the Power Marketing Administrations, and privatize the Naval Petroleum Reserves, and the development and deployment of Atomic Vapor Laser Isotope Separation technology. Bonneville's designated representative to this group is Larry C. Larson, Assistant Administrator and Manager of Bonneville's Washington, D.C. Office.

Recently, a Task Group on Power Marketing Administrations was established to analyze key policy issues including the structure of proposed sales, legislative issues, public process, protection of employee rights, economic evaluation, and implementation management. Bonneville's representative to the Task Group is James J. Jura, Executive Assistant Administrator.

Mr. Bevill. What are your anticipated expenditures for studying and preparing for the sale of Bonneville?

Mr. Johnson. Bonneville has made some existing staff resources available to respond to inquiries regarding defederalization. Bonneville will continue to be responsive to requests for information and analysis.

However, there are currently no plans to add staff or acquire contractor services related to privatization studies. We are not at this time able to estimate what our expenditures will be for this effort.

STATUS OF MAJOR LITIGATION

Mr. Bevill. Please provide the status of the major issues under litigation affecting BPA.

Mr. Johnson. I will be glad to provide for the record the status of the major issues under litigation affecting BPA.

(The information follows:)

1. Washington Public Power Supply System

Bonneville Power Administration v. Washington Public Power Supply System, No. C82-1252 (W.D. Wash. filed 10/26/82)

Status: BPA entered into a settlement agreement with the IOUs on the issues relating to BPA's decision to slow down construction of WNP-3. The issue of cost-sharing between twin plants WNP-1 and WNP-4, and WNP-3 and WNP-5 is still unresolved.

Several groups of public utilities have challenged the settlement on several grounds. These challenges have been brought in the United States District Court and in the Ninth Circuit Court of Appeals. BPA has submitted briefs challenging the jurisdiction of the District Court; the judge has granted limited discovery but has not ruled on BPA's motion. No briefing has occurred in the Ninth Circuit as of the date of this response.

Chemical Bank v. PUD No.1 of Benton County, Washington, et al.; In re Washington Public Power Supply System Securities Litigation, J.P. M.D.L. No. 551 (W. D. Wash filed Aug. 23, 1983).

Status: BPA was a defendant in a consolidated proceeding involving separate class actions brought on behalf of persons who purchased WNP-4/5 bonds. On January 24, 1986, the tort claims pending against the United States in this action were dismissed. The litigation is proceeding against the remaining defendants.

2. Power Sales

Department of Water and Power of the City of Los Angeles v. Bonneville Power Administration, No. 84-7618 (9th Cir. filed 9/20/84)

California Energy Resources Conservation and Development Commission v. Bonneville Power Administration, No. 84-7836 (9th Cir. filed 12/5/84) consolidated with Public Utilities Commission of California v. Johnson, No. 84-7838 (9th Cir. filed 12/6/84)

Status: These cases challenge BPA's intertie access policy, a policy governing access to BPA's surplus transmission connecting the Pacific Northwest with the Pacific Southwest. This policy is vital to protecting BPA's access to export markets for BPA's surplus power. Briefs have been filed; oral argument is expected this summer.

Department of Water and Power of the City of Los Angeles v. Bonneville Power Administration, 759 F. 2d 684 (9th Cir. 1985).

Status: LADWP challenged BPA's Intertie Access Policy. The 9th Circuit Court of Appeals upheld the Intertie Access Policy, ruling that BPA has authority to allocate Intertie access on a non-competitive basis, reserve Intertie capacity for its own sales, provide priority access to Northwest utilities, and determine how and when Canadian sellers may transmit energy on the Intertie. LADWP decided not to appeal; however, the California Energy Commission (CEC) and the California Public Utility Commission (CPUC) filed post judgment motions for rehearing and petitions for certiorari to the Supreme Court. These were denied.

3. Rates

Pacificorp v. Federal Energy Regulatory Commission, No. 84-7569 (9th Cir. filed 8/31/84). Consolidated with Pacificorp v. BPA, No. 84-7862 (9th Cir. filed 12/21/84, and Pacificorp v. Federal Energy Regulatory Commission, No. 85-7103 (9th Cir. filed 2/21/85)

Status: Challenge to BPA's Revised Average System Cost methodology which could increase the cost to BPA for residential exchanges with IOU's. Awaiting Ninth Circuit Court of Appeals decision.

4. FERC Proceedings

1981 and 1982 Non-Firm energy rates

Status: These cases could have significant impact on BPA revenues. They have been submitted to FERC for decision. A FERC Administrative Law Judge issued an Initial Decision (29 FERC $63,039) addressing the cost basis of the non firm energy rates and a wide variety of other issues. The decision found that the rates charged by BPA were too low. The Initial Decision is now before the FERC commissioner's for review.

5. Miscellaneous

Seattle Master Builders Association v. Northwest Power Planning Council, No. 83-7585 (9th Cir. filed 7/29/83).

Status: A coalition of homebuilders and construction material suppliers challenged the Northwest Conservation and Electric Power Plan adopted by the Northwest Power Planning Council. BPA intervened and submitted briefs arguing that the case is not ripe for review. Alternatively, BPA argued that the Appointments Clause of the Constitution does not prohibit the creation of the Council since its role is advisory. Oral arguments were presented May 9, 1985. No decision has been delivered at this date.

Confederated Tribes of the Colville Indian Reservation, et. al. v. U.S.A., Docket No. 181-D, U.S. Claims Court. The Colville's claim compensation for government's use of their lands for the production of power. The Tribes' claim involves a significant amount of the power from Grand Coulee and Chief Joseph dams. BPA revenues could be affected if Tribes are successful.

Status: Case is pending in the Court of Claims.

SURPLUS POWER FORECASTS

Mr. Bevill. What are the latest forecasts, with regard to the continued existence of surplus power in the Northwest?

Mr. Johnson. The latest estimate of Northwest firm surplus power is in the Pacific Northwest Loads and Resource Study published by BPA in December 1985. The regional surplus is 2679 average megawatts in contract year 1985-86 and decreases until the Northwest is deficit by 182 average megawatts in contract year 1993-94. The Federal surplus is 2080 average megawatts in contract year 1985-86 and decreases to 600 average megawatts in contract year 1993-94. A breakdown of regional and Federal firm surplus estimates by contract year is provided for the record.

(The information follows:)

REGIONAL FIRM SURPLUS POWER BY CONTRACT YEAR 1/

Contract Year	Firm Surplus
85-86	2679
86-87	2384
87-88	1883
88-89	1432
89-90	1090
90-91	1101
91-92	445
92-93	193
93-94	-182

FEDERAL FIRM SURPLUS POWER BY CONTRACT YEAR 2/

Contract Year	Firm Surplus
85-86	2080
86-87	1734
87-88	1537
88-89	1225
89-90	1083
90-91	1095
91-92	779
92-93	767
93-94	600

1/ Data from Pacific Northwest Loads and Resources Study, Executive Summary, Page 18, line 36.

2/ Data from Pacific Northwest Loads and Resources Study, Executive Summary, Page 28, line 29.

Mr. Bevill. What is the expected impact of the construction of the third 500 kV-AC line on the expected surplus electrical power in the Northwest?

Mr. Johnson. Currently, the Pacific Northwest has two types of surplus, firm and nonfirm. The amount of nonfirm in a year is determined by the water condition of that year. The better the water condition, the more nonfirm. Under good water conditions the amount of nonfirm available for sale in certain months exceeds the size of the current intertie. Therefore, with the addition of the 3rd AC, the Northwest will be able to market more nonfirm rather than spilling it, although the total amount of nonfirm has not changed.

The only other determining factor of the amount of nonfirm is the size and number of dams on the river. Since no major hydroelectric projects are planned in the future, the amount of nonfirm averaged over all water conditions, is not forecasted to change in the future. Therefore, the 3rd AC has no effect on the expected nonfirm surplus in the Northwest. The 3rd AC will have an effect on the distribution of the nonfirm between nonfirm purchasers based on ownership of the 3rd AC.

The amount of firm surplus in the Northwest is dependent on the amount of firm load the Northwest has as compared to its firm resources. The Northwest builds resources to meet Northwest firm load, in which case the 3rd AC has no effect on the Northwest's surplus.

There are two ways the 3rd AC could affect Northwest surplus; first if a Northwest entity decided to change its planning criteria to build for California load as well as Northwest load (i.e., a long-term firm contract), contingent on the 3rd AC being built; and secondly, if a Northwest entity chose to build resources ahead of need (i.e., short-term firm surplus sales), contingent on the 3rd AC being built.

In the first case, the entity would have to obtain BPA's long-term agreement to transmit the power over the 3rd AC. in the second case, the surplus would be a short-lived phenomena, since the entity would eventually need the resource for its own firm loads.

CANADIAN POWER

Mr. Bevill. Please describe the current situation with regard to the potential sale of electrical power by Canada to and through your region.

Mr. Johnson. BPA, British Columbia Hydro, and utilities in the Northwest and Southwest are in the process of working toward agreement on a Memorandum of Understanding which describes conditions and processes for moving forward with discussions on export of Canadian power built ahead of need for export to the United States. That Memorandum of Understanding will provide the framework for future discussions and analysis.

That agreement will describe conditions before the detailed discussions begin. It will also describe the process, including BPA's Intertie Access Policy and Intertie Development and Use EIS, that will be required before transmission access can occur. Key to the success of an export to the Northwest and California is additional transmission, specifically, a 3rd AC line; firm transmission contracts with BPA or other Northwest utilities; and completion of the Intertie Access Policy and environmental work on the Intertie Access Policy and the 3rd AC line.

If the memorandum of understanding is signed, most of the work could be completed by late 1988 which would facilitate signing of firm commitments to purchase by interested utilities.

MARKETING SURPLUS POWER

Mr. Bevill. Please describe the problems BPA has experienced in marketing firm surplus power outside the region

Mr. Johnson. BPA has experienced problems in its efforts to market firm surplus power ~~to~~ its major potential purchasing market in the Pacific Southwest region. However, our recent agreement with the Southern California Edison Company over the principles for a 20-year firm power sale exchange agreement represent what we believe to be a breakthrough in that effort. In brief, problems which we have encountered include: the unstable nature of the Pacific Southwest market with respect to fuel prices and future resources; limitations on BPA access to the full range of California markets; framing a long-term contract for sale of firm surplus power in the context of the Pacific Northwest Regional Preference Act; the need to educate Pacific Southwest customers on BPA's plans to achieve stable and predictable rates; and finally the difficulty of fashioning mutually beneficial arrangements with California utilities who do not have common needs. Instead, each of these utilities is unique by virtue of its resource circumstances, its interrelationship to other California utilities, and other parameters. Substantial creativity and flexibility is required to meet these differing needs.

With the committee's indulgence, I will further amplify this list of problems. Our first-mentioned problem, the unstable Pacific Southwest market, is related to several market components. Fossil fuel price swings have created significant uncertainty as to both the short- and long-term costs of fuel. This has hampered agreement on price structures for long-term purchase contracts. In addition, the State of California has a large and active potential electric power supply from PURPA qualifying facilities under whose place in the State's resource planning is not yet fully determined.

There are portions of the potential Pacific Southwest purchasing market which are not accessible to BPA due to lack of transmission interconnections. Some of these potential purchasers will be reachable once their shares of the California-Oregon Transmission Project are available. However, there is still a significant potential market without direct access.

BPA has had longstanding power sales and exchange contracts with many California utilities which all are due to terminate during the mid-to-late 1980s. BPA's current marketing objectives for its firm surplus power preclude a simple renovation of the familiar older contract terms, and therefore, significant effort has been required to develop new marketing concepts with the customers.

BPA has had to develop a contractual framework which provides the purchaser with a valuable and dependable long-term power supply, while conforming to the requirements of the Pacific Northwest Regional Preference Act, which requires recall rights over firm energy for use to serve Pacific Northwest loads.

BPA has surplus power to sell now and also has available long-term surplus capacity. Many California utilities, while needing long-term capacity, are not presently anxious to purchase large amounts of surplus power. The need to economically market this power in the near term is important to BPA revenues. It has been a challenge to tailor-make transactions with individual California utilities that are responsive to their needs, to BPA's needs, and to each of their individual circumstances.

BPA's customers in both the Pacific Northwest and Pacific Southwest have weathered a substantial increase in BPA costs in the early 1980s. While Pacific Northwest customers watch BPA affairs very closely and see that costs are under control and the outlook for stable, predictable rates is good, some California customers do not have as clear an understanding of the causes are of past increases in costs and the prospective outlook for long-term stability and predictability. BPA is working hard to provide clear information about both past events and future expectations, and we now see a number of California utilities perceiving that long-term transactions may be mutually advantageous.

BPA/POWER PLANNING COUNCIL JURISDICTIONAL DISPUTES

Mr. Bevill. Please describe the status of any jurisdictional disputes you may be having with the Northwest Power Planning Council.

Mr. Johnson. By and large, our relations with the Council are probably as good now as they have ever been since the Council was established in April 1981. There is a high level of staff-to-staff interaction and cooperation, and my office and I are in frequent contact with Council members to discuss issues affecting our two agencies. Generally, differences between us get ironed out in mutually satisfactory ways. There are, however, at this time two unresolved disagreements between BPA and the Council.

The first is yet in informal discussions and has to do with the acquisition of major resources. The Northwest Power Act requires a formal and lengthy public hearing process if BPA is seeking to acquire any major resources defined as over 50 average megawatts for more than 5 years. This also applies to any conservation measure that will save an amount of electric energy equivalent to that of a major resource. Of course, in a time of surplus we have not acquired any major resources, although if there are lost opportunities or otherwise irresistably attractive prospects, we might. The formal public hearing process is called the Section 6(c) process.

At the end of that 6(c) process, the Administrator must publish a written decision whereupon the Council has 60 days within which to determine that the proposed major resourse acquisition is either consistent or inconsistent with the Council's Power Plan. If the Council determines that the major resource acquisition is inconsistent with the Plan, BPA cannot acquire it unless two conditions are met. First, the Administrator must find that the resource is needed to meet BPA operations, and second, there must be an Act of Congress specifically authorizing the expenditure of funds for that purpose.

BPA and the Council disagree on whether an entire program such as BPA's proposed conservation/modernization program for aluminum smelters is a single measure. The Council thinks it is a single measure that should trigger the 6(c) process calling for Council determination of consistency or inconsistency with the Power Plan.

Based on a careful reading of the Act, BPA believes that it is not. Our view is that measures are on a contract-by-contract basis and not on a program-umbrella basis. We believe that our interpretation is not only consistent with the letter of the law, but with the spirit as well. We believe the Congress intended BPA's acquisition of some non-major resources. In the acquisition of such non-major resources, for example contracts with utilities for residential weatherization and for Model Conservation Standards support, BPA goes through full and open public processes including consultations with and consideration of comments from the Council.

We are involved in discussions with the Council on this subject to try to figure out some mutually agreeable way, consistent with the Act, in which the Council may review entire acquisition programs in the context of its Power Plan.

A second dispute with the Council involves a lawsuit filed in the Ninth U.S. Circuit Court of Appeals by several home builders associations. The homebuilders allege that the Council is unconstitutionally established in violation of the Appointments Clause of the United States Constitution because it is a state appointed body which exercises significant authority under Federal law.

The Council asserts that it exercises authority that constrains certain activities of Federal agencies, but asserts that the Council is constitutional because, among other reasons, they were formed through an interstate compact.

The United States Government intervened in the case and asks that the court dismiss the suit because the Council's authority to "recommend" model building standards and conservation surcharges is not an exercise of significant authority under federal law. The Government urged that other Council authority may present this difficult Appointments Clause issue, but that that authority is not at issue in this case and the Court should not reach that issue in this case.

Oral arguments took place almost a year ago and we are still awaiting the court's decision.

NORTHWEST ALUMINUM INDUSTRY

Mr. Bevill. Please describe the current and projected condition of the aluminum industry in the Northwest and the impact the electrical rates are having on the industry.

Mr. Johnson. The Pacific Northwest has about one-third of the U.S. primary aluminum capacity and one-tenth of world wide capacity, the largest concentration under a single electrical supplier anywhere in the world. Rapidly rising regional power rates, and the increased strength of the dollar compared to foreign currencies, during the 1980-85 period, however, have caused Northwest aluminum smelters to lose much of their historic competitive advantage in world aluminum markets. This has resulted in regional smelters becoming swing operations with production levels, and related BPA loads, subject to extremely volatile market prices.

BPA's current industrial standard power rates (22.8 mills), are in the upper quartile of power rates to smelters worldwide. Current smelter operating rates in the Pacific Northwest region average 70 percent, compared to 83 percent for the U.S. and 90 percent for the world. In the Pacific Northwest, one smelter, The Dalles, has closed and several others are threatened. Nevertheless, there is an effort to get The Dalles opened under new ownership as a tolling operation, similar to the operating mode adopted by the new Columbia Falls Aluminum Company to keep their smelter going.

The industry is undergoing major structural changes, which have resulted in several recent smelter closures, the threat of many more, and a general shift of corporate strategies away from primary ingot toward more profitable products. Production costs of smelters worldwide have been falling, and are expected to continue to fall as a result of labor and power rate concessions, as well as severe overcapacity in alumina production, the basic ore from which ingot is made. Large energy surpluses in major aluminum producing regions (e.g., Australia, Canada, Brazil) are likely to put intense competitive pressure on power suppliers to lower power rates to aluminum smelters. If production costs continue to fall, smelters in the BPA region will be even more likely to have operating rates swing in the future.

On the other hand, the recent drop of the U.S. dollar compared to foreign currencies shoud tend to help the competitive position of the domestic aluminum industry. It is still too early to tell what specific impact this will have on the aluminum industry in the Pacific Northwest.

Recently aluminum prices have rebounded from around 45 cents per pound to about 60 cents per pound. This price recovery is due to a rebalancing of supply and demand and hedge buying on the part of consumers as upcoming labor renegotiations raise the potential for a strike in the industry. Nevertheless, long term aluminum price expectations have been reduced compared to projections made several years ago. It is unclear whether this is only a short term rebound or whether there will be a longer term price recovery.

FISH AND WILDLIFE

Mr. Bevill. Please provide a specific description of the new fish enhancement facility requested in FY 1987.

Mr. Johnson. BPA has requested authorization to fund construction of one new major capital fish facility in FY 1987.

If constructed this year, the proposed Enloe Dam Fish Passage Project would include facilities on the Similkameen River in Washington State and would establish anadromous fish runs above an existing impassible barrier, providing fish production throughout the river basin as offsite mitigation for juvenile fish losses occurring at hydro- electric projects on the mainstem

Columbia River. In FY 1987 BPA may obligate $2.7 million of an estimated $5.4 million total cost for this project. Operation of this facility is currently scheduled to begin in 1988.

Mr. Bevill. Please discuss the BPA fish and wildlife program. What are the significant changes anticipated in FY 1987?

Mr. Johnson. Under section 4(h) of the Pacific Northwest Power Act, BPA is to use the Bonneville Fund to protect, mitigate and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries.

The rapid growth in program costs, approximately 30 percent yearly since 1983, reflects BPA's continued commitment to it responsibilities under the Pacific Northwest Power Act. The FY 1987 budget will fund the continuation of projects begun in FY 1986 or before, with budget increases largely attributable to projects progressing from planning to the design and construction stages in FY 1987.

Mr. Bevill. What are the significant changes anticipated in FY 1987?

Mr. Johnson. In FY 1986 BPA embarked on the development of a comprehensive evaluation and monitoring program for fish and wildlife enhancement activities. The FY 1987 budget includes funds for the first full year of this effort. Evaluation and monitoring measures the efficacy of individual and groups of related projects. Anticipated fish benefits are evaluated and the prudence of future similar enhancement activities can be determined. Additionally, evaluation and monitoring is needed to account for the benefits of the ratepayers' investments for fish and wildlife and, ultimately, to satisfy the Administrator's obligation for fish and wildlife under the Pacific Northwest Power Planning Act.

FY 1987 funding plans also include artificial propagation facilities, measures which mitigate "systemwide" passage impacts and fisheries research usable in hydroelectric mitigation throughout the Columbia River Basin. These plans reflect BPA's role in achieving the fish and wildlife objectives of the Pacific Nortnwest Power Act and its commitment to supporting the Northwest Power Planning Planning Council's Fish and Wildlife Program.

Mr. Bevill. What are BPA expenditures and lost revenues for the fish and wildlife program in FY 1985, FY 1986, and FY 1987?

Mr. Johnson. Expenditures in FY 1985, FY 1986, and FY 1987 for the BPA fish and wildlife program are $26.1, $34.2 and $44.2 million respectively. The breakdown of the expenditures between the expensed and capital portions of the program is shown in a table which I will provide for the record.

(The information follows:)

BPA F&W PROGRAM EXPENDITURES
(IN MILLIONS OF DOLLARS)

	FY 1985 Actual	FY 1986 Approved	FY 1987 Proposed
Capital	10.2	10.5	18.5
Expense	15.9	23.7	25.7
Total	26.1	34.2	44.2

BPA losses in power revenues due to the fish and wildlife program result from implementation of two fisheries measures: the Water Budget and spills at specific dams for fish passage.

Water Budget Measure: Using power systems models, BPA estimates that this measure costs about $58 million annually in lost revenue in an average water year. In low water years the cost is greater, while in high water years the cost is less. BPA has not yet attempted to determine actual Water Budget revenue losses incurred in FY 1985, due to difficulties in modeling procedures.

Spill Measure: Revenue losses in FY 1985 from spill are estimated at $27 million. Revenue losses for FY 1986 and FY 1987 are yet to be determined because fish spill planning has not been completed.

In addition to direct funding of the Fish and Wildlife Program, BPA reimburses for other, substantial fishery progams. By FY 1989, BPA's repayment obligation for mitigation facilities for the Federal Columbia River Power System will total $539 million. This includes costs for fish ladders, fish screens, Corps of Engineer fish hatcheries, and the Lower Snake River compensation plan fish hatcheries. Operation and maintenance costs associated with these facilities, and also reimbursed annually by BPA, are projected to be $17 million by FY 1989.

Mr. Bevill. Please discuss the coordination and participation of DOE and other Federal and state activities with regard to fish enhancement in the Northwest.

Mr. Johnson. BPA is part of the Department of Energy and consequently DOE provides review of BPA's fish and wildlife budget and approval for National Environmental Policy Act documents related to specific protection, mitigation, and enhancement activities funded by BPA.

Other Federal and state agencies also play a significant role in regard to BPA fish enhancement activities. First of all, BPA funds fish enhancement activities through the Northwest Power Planning Council's Fish and Wildlife Program developed pursuant to the Pacific Northwest Power Act. The Council developed the Program from recommendations made by the region's Federal and state fish and wildlife agencies, Indian tribes, and other concerned interests. These recommendations were developed to meet the management objectives of the fish and wildlife agencies and Treaty Tribes of the Columbia River Basin. The Council used these recommendations as the basis for its Program after an extensive public review and comment process.

Before funding fish enhancement projects, BPA develops comprehensive annual reports and work plans that summarize proposed activities. These plans are subjected to technical and policy review of Federal and state fish and wildlife agencies and Tribes. In addition, BPA has entered into an Inter-Governmental Agreement with the Council that provides for Council review of BPA-sponsored fish enhancement activities under the Program.

In summary, Mr. Bevill, there is a substantial amount of both coordination and participation in BPA fish enhancement activities by the region's Federal and State fish and wildlife agencies and Indian tribes. This is necessary because BPA relies upon the expertise of these other agencies and Tribes in order to spend ratepayers' money prudently and effectively to protect, mitigate, and enhance fish and wildlife.

Mr. Bevill. What are the non-BPA expenditures by State and Federal Agencies for fish and wildlife programs in FY 1985, FY 1986, and FY 1987? Please provide this breakdown by State and Agency.

Mr. Johnson. This information is not available at this time. It will be forwarded to the Committee as soon as it becomes available.

In 1985, in response to Committee inquiry, BPA initiated an extensive data gathering program on the expenditures by state and Federal agencies for fish and wildlife programs. The annual effort to update this information, with the cooperative help of the States and Federal agencies, is presently underway. As I previously indicated, the data will be forwarded to you as soon as it is available.

CONSERVATION

Mr. Bevill. Please describe how your conservation program in FY 1986 is responsive to the direction contained in the reports on the FY 1986 appropriation bills.

Mr. Johnson. The Committees urged BPA to increase its conservation efforts in the industrial sector, and specifically to look at such options as conservation through industrial plant modernizations that would also act to stabilize near-term loads and help maintain the economic viability of the Northwest aluminum industry. BPA has proceeded on three major fronts in the industrial sector in FY 1986. In our Industrial Test Project, we are establishing the basis for standard methods of energy use analysis for the three industrial groups--food processing, wood products, and pulp and paper--that represent three of the largest blocks of Northwest industrial power consumption outside of our directly served industries. In Sponsor-Designed Projects, we have entered into contract negotiations with eight companies selected in a competitive solicitation for industrial plant retrofits. The contracts under negotiation include the addition of an automatic alumina feed process control at Alcoa's Vancouver, Washington aluminum reduction facility. A contract was signed on February 26, with the Pennwalt Corporation for the installation of new energy-efficient chlorine electrolysis cells at their Tacoma, Washington chlor-alkali plant. And in the matter of industrial stabilization, we are working on the design of the Conservation/Modernization Program which would offer to BPA's aluminum customers our financial participation in their improvement of smelter efficiencies.

Mr. Bevill. Please describe the FY 1986 and FY 1987 undistributed reductions to the conservation program.

Mr. Johnson. The FY 1986 undistributed reduction of $8.9 million will reduce BPA's conservation effort mainly in commercial and industrial capability development. The total reduction in these areas will exceed $8.9 million because of BPA's need to support the Northwest Power Planning Council's Model Conservation Standards, a high-priority program, at levels higher than originally budgeted. About $6 million will come out of commercial programs; $5 million out of industrial programs; and $3 million out of planning and evaluation, research and development, and residential programs.

The FY 1987 undistributed reduction of $21.7 million will again come mainly from the commercial and industrial areas. Preliminary assessments indicate that commercial activities would absorb $12 million, industrial $7 million, and residential about $3 million of the reduction. However, Model Conservation Standards support activities are now expected to require greater sums than originally budgeted for FY 1987, so that retrofit activities in the several sectors may have to be further reduced as we enter Fiscal Year 1987. The extent of these further reductions depends on the penetration of Model Standards Construction in new housing--in other words, on the success of our Super GOOD CENTS program which now aims for 27 percent of the market in the 1987 building season.

Mr. Bevill. Describe your program of industrial conservation with particular emphasis on your program to participate in the modernization of plants and increases to plant efficiency.

Mr. Johnson. BPA's programs of industrial conservation are in the developmental stage. In FY 1984 and FY 1985, BPA solicited energy efficiency projects from Northwest industry to consider for financial support. Two projects were funded from the pilot FY 1984 request and eight are approved and in contract negotiation from the FY 1985 request. BPA is reviewing this approach with industry and other interested parties, and we intend further requests for projects in FY 1987.

BPA is currently developing a Conservation/Modernization Program of financial support for efforts to increase plant efficiency in the region's aluminum smelters. We also intend to examine the situation of other Northwest industries to see if a similar effort with them would provide similar benefits of near-term revenue stability and long-term cost-effective conservation for the BPA system.

BPA is developing a comprehensive technical assistance program to operate in the industrial sector, and has several research, development and demonstration projects underway.

COMPLETION OF THE PNW-PSW INTERTIES

Mr. Bevill. Describe the effort and expected completion of the PNW-PSW Interties.

Mr. Johnson. Efforts are underway on two major PNW-PSW Intertie projects. The status of the new 500-kV transmission line from southern Oregon to California was described earlier. That project is scheduled for energization in January 1991.

Expansion of the existing PNW-PSW direct current (DC) intertie is also in progress. This project will add 1,100 MW to the DC Intertie's existing 2,000 MW capacity. BPA and the Los Angeles Department of Water and Power (LADWP) will make additions to their respective terminals at either end of the 846-mile line, with no significant new transmission lines needed. Completion in February 1989 is planned.

In October 1985 BPA awarded a $52.7 million contract to Brown Boveri Inc. (BBC) for design, construction, and equipment manufacturing. LADWP awarded a similar $55.05 million contract. Both contracts are divided into two phases. Phase I of these contracts, covering system studies and preliminary design, has begun. The Phase I portion of each contract is limited to $2 million.

BPA is supplementing the Environmental Assessment issued in February 1985. New information from continuing environmental studies, including fish mortality, will be incorporated. BPA is conducting further analysis of the effects on hydroelectric operations from utilizing the increased capacity. If the analysis, including analysis on the potential for increased fish mortality, supports a Finding of No Significant Impact (FONSI), BPA will supplement the EA issued in February 1985. A FONSI could be in place by July or August 1986 with Phase II of the contract initiated soon there after. If a FONSI is not supported, the start of Phase II would be dependent on the outcome of the analysis in the IDU EIS and subsequent decisions on expansions and any needed mitigation.

CONSERVATION

Mr. Bevill. Please discuss the significant decrease in the BPA conservation programs in FY 1987.

Mr. Johnson. As mentioned previously, the undistributed reduction of $21.7 million in BPA's FY 1987 conservation program will be distributed among commercial, industrial and residential retrofit activities, with commercial absorbing $12 million, industrial $7 million, and residential about $3 million of the reduction. However, should support programs for the Northwest Power Planning Council's Model Conservation Standards require greater sums than originally budgeted for FY 1987, the retrofit activities may have to be further reduced. The extent to which we would make further reductions depends on the success of our regionwide Super GOOD CENTS program which now aims for 27 percent penetration of the new housing market in the 1987 building season. It should be noted that, even with these reductions, BPA's conservation program obligations will be higher in FY 1987 than in FY 1986.

Mr. Bevill. Please discuss the BPA Solar and Heat Pump Energy Conservation Program.

Mr. Johnson. As part of its residential energy conservation efforts, in FY 1986 BPA began operating a Solar and Heat Pump Water Heating Market Test over a three year period. The primary purpose of this project is market research.

The project was designed to provide information on the relative effectiveness of a variety of program design options, and particularly inquire into the relative effects of promotion and financial incentives on the purchase of solar water heaters and heat pump water heaters. Through 11 selected utilities, BPA offers incentives ranging from $200 to $500 for the installation of a solar or heat pump water heater that meets the program equipment specifications, and also conducts various levels of promotional activities. Each utility is assigned a particular combination of incentive and promotion levels.

This project is scheduled to be completed in FY 1987.

IMPACT AID

Mr. Bevill. Please describe the BPA Program for Impact Aid.

Mr. Johnson. Section 7(m) of the Northwest Power Act provides that Bonneville may make annual impact aid payments to appropriate local governments within the region with respect to Bonneville major transmission facilities constructed since passage of the Pacific Northwest Power Act. The intent is to pay for a qualifying local government's cost of services concerning a major transmission facility located within the government's boundaries. Payments are subject to a uniform regionwide formula approved by the Federal Energy Regulatory Commission and are funded from Bonneville ratepayer revenues.

The first payments of approximately $1.0 million to local governments will be made in FY 1986, and cover the impacts of major transmission facilities constructed since passage of the Pacific Northwest Power Act. No impact-aid funding has been identified for FY 1987 because no major facilities are contained in the FY 1987 budget.

BPA RATES

Mr. Bevill. What impact would repayment reform have on BPA rates in FY 1988?

Mr. Johnson. The impact on BPA's Priority Firm rate of the repayment reform is expected to be 6 to 9 percent for FY 1988.

Mr. Bevill. What factors, other than repayment reform, might affect BPA rates in FY 1987 and FY 1988?

Mr. Johnson. BPA is now in an extremely dynamic period. BPA's direct service industry loads and the California market for BPA energy are major uncertainties that could affect BPA's rates in FY 1987 and FY 1988.

Recent declines in oil and gas prices have significantly reduced both the amount and price of BPA's sales to California. For example, in February 1986, BPA's California sales brought $25 million in revenues, while in February 1985, they brought $44 million. Predicting whether BPA's California market will deteriorate or improve in the near or long term is extremely difficult given the volatile nature of oil and gas pricing. If oil and gas prices in California remain low through FY 1988, BPA ratepayers could face increases of 10 to 15 percent above rate levels currently in effect. This would be in addition to any rate increase that would be required by implementation of repayment reform.

Stable direct service industry loads also cannot be taken for granted. BPA is presently examining three proposals to help the DSIs stabilize their operations. The proposed variable rate is moving forward in a 7(i) ratesetting process. Two other proposals, a conservation/modernization program and a link between the priority firm and industrial rates, are at an earlier stage of development. If aluminum prices remain low and/or rate increases as described above occur, and BPA is unable to fully implement these actions, instability in the direct service industry load might increase rates to other customers.

RICHARD B. RUSSELL PROJECT

Mr. Bevill. Please describe the status of the Richard B. Russell Project and your marketing activities for this project.

Mr. Geisinger. The four conventional units are on-line and the four pump-generator units are scheduled to begin commercial generation during 1990. Project generation is marketed in the Georgia-Alabama System within the service areas of the Southern Company (Georgia, Alabama, Mississippi, and panhandle Florida), South Carolina Public Service Authority, South Carolina Electric and Gas Company, and Duke Power Company.

SALE OF THE PMAs

Mr. Bevill. Please describe the preparations being made for the sale of the Southeastern Power Administration.

Mr. Geisinger. Southeastern is participating with the Department in the development of plans to implement the sale which will include the development of legislative proposals.

Mr. Bevill. What actions are Southeastern taking and planning in anticipation of the sale?

Mr. Geisinger. Southeastern is making preliminary plans for a regional task group that will identify and address issues relating to the sale.

Mr. Bevill. What is the estimated impact on the regions serviced by the Southeastern Power Administration on the proposed sale.

Mr. Geisinger. It would be premature at this time to estimate the impact on the region serviced by Southeastern since plans are still in a preliminary stage.

Mr. Bevill. What detailed studies have been performed?

Mr. Geisinger. No detailed studies on the defederation issue have been made.

DEFERRAL

Mr. Bevill. Please describe the impact on the FY 1986 program of the proposed deferral of $2.1 million.

Mr. Geisinger. The $2.1 million proposed for deferral represents the unobligated balance carried forward from FY 1985 and will have no impact on the FY 1986 program.

PURCHASE POWER AND WHEELING

Mr. Bevill. Please discuss the rationale for increasing the purchase power and wheeling by $6.8 million from FY 1986 to FY 1987.

Mr. Geisinger. Wheeling charges to transmit power to preference customers in the Southern Company service are handled, to the extent possible, by net billing. Decreasing quantities of capacity will be sold to the utilities through May 1991, and charges to the utilities for this capacity will be used to offset charges by the utilities for transmission services provided. During FY 1987 the increased funding will be required for payment of transmission services under contractual arrangements with Georgia Power Company, since capacity sales to the Company will be insufficient to fully net bill the charges for transmission services provided by that Company.

Mr. Bevill. Please describe the status of your efforts to change the policy with regard to purchase power and wheeling billing.

Mr. Geisinger. The new power marketing policies have eliminated the sale of capacity to some of the investor-owned utilities that provide transmission service to Southeastern. In the past, Southeastern has been able to net the Southeastern bill for the sale of capacity against the utility's bill for wheeling services, with the residual being paid by the owing party. Contractual arrangements implementing the Georgia-Alabama System power marketing policy in the western portion of that system provide for continuation of the net billing procedures to some extent during the next six years.

REPAYMENT REFORM

Mr. Bevill. What are the estimated returns to the Treasury from SEPA operations with and without rate reform?

Mr. Geisinger. Total funds returned to the Treasury (in millions of dollars) for 1986-1989 are estimated as follows:

	FY 1986	FY 1987	FY 1988	FY 1989
With Rate Reform	109	130	134	147
Without Rate Reform	109	117	121	134
Increase	0	13	13	13

Mr. Bevill. Please provide marked up pages of the budget justifications showing the effect of not implementing the rate reform.

Mr. Geisinger. I would like to insert for the record Southeastern Power Administration's marked up budget justification which shows the effect of not implementing the rate return.

(The information follows:)

- Negotiate and execute any remaining contractual arrangements for power marketed pursuant to written power policy to existing and additional customers.

- Administer approximately 300 contracts which benefit approximately 500 preference customers in a fair and effective manner that carries out the intent of contract provisions.

- Formulate and obtain confirmation and approval of wholesale power rates for each of Southeastern's systems of projects.

- Seek favorable resolution of pending lawsuits brought against the Department and Southeastern.

- Market on a long-term basis power made available from the Richard B. Russell Project which will add 300,000 kilowatts of pumped storage power, scheduled to begin operation in 1990.

- Prepare analyses of proposed hydroelectric projects to assure that developments are financially and environmentally sound and make maximum use of resources.

- ~~Repayment reform is being proposed as a legislative initiative~~.

Although funds are included in the budget for operating the power marketing administration in 1987, the Administration will actively seek to privatize these utility systems. Utilities are not normally a Federal responsibility, and non-Federal owners can operate the PMA's as efficiently, or more efficiently, than the Federal Government.

The Administration will pursue privatization through an open process. It will be guided by the following principles: (1) seek a fair return to the Federal taxpayers from the privatization of these assets, (2) recognize the benefits currently enjoyed by existing customers, and (3) recognize and provide appropriate protections for the personnel benefits of Federal employees.

Before implementation of privatization, the Administration will seek the views of, and promote interest among, concerned groups and individuals, including Congressional delegations, State and local official, current customers, the financial community, and public power and private sector energy interests.

It is expected that the Power Administrations will be sold with all the PMA's being transferred from Federal control by FY 1991. ~~In the interim, the FY 1987 budget proposes to modify PMA capital investment repayment practices legislatively~~, ~~consistent with sound business principles, to protect the interests of the Nation's taxpayers. These modifications require repayment of the unpaid balance of the original Federal investment at a level not less than would be required under a fixed, straight line amortization schedule for each power investment financed by appropriations and placed in service. This requirement would not apply to irrigation investments. Repayments of principal, if necessary, can be deferred~~, ~~subject to the same terms and conditions applicable to deferred interest payments~~. ~~(e.g., current interest rates are used because the deferral helps finance current operations. The impact of this repayment proposal is relatively modest compared to the proposal made last year in the 1986 budget~~.

Receipts from power sales using ~~revised repayment criteria~~ are estimated at ~~$130,166,000~~ in FY 1987.

Accomplishment of these objectives will help meet the objectives of pertinent public laws; make an important contribution to the peaking power requirements of the area; contribute significantly to the reliability of a large number of area systems; and provide a significant contribution to the maintenance of the pluralistic power industry and to the area's economic well-being.

FY 1986 DEFERRAL

Mr. Bevill. Please describe the impact of the FY 1986 deferral of $13.2 million.

Mr. Wilkerson. There will be no impact on Southwestern's FY 1986 program. The deferral of $13.2 million is actually from FY 1985 appropriations for purchase power funds which were not required due to the Southwest receiving above average rainfall.

CONTRACT CONVERSIONS

Mr. Bevill. Discuss the benefits of your effort to convert Southwestern contracts from high energy commitments to low energy commitments.

Mr. Wilkerson. The benefits that are derived from the conversion of contracts from high energy commitments to low energy commitments are a reduction in the Purchase Power and Wheeling budget. Without these conversions the amount requested for the FY 1987 Purchase Power and Wheeling budget would have been $15.0 million greater than the amount requested.

SALE OF SOUTHWESTERN POWER ADMINISTRATION

Mr. Bevill. Please describe the preparations being made for the sale of the Southwestern Power Administration.

Mr. Wilkerson. Southwestern is developing plans to implement the divestiture initiative.

Mr. Bevill. What is the estimated impact on the regions serviced by the Southwestern Power Administration of the proposed sale?

Mr. Wilkerson. It would be premature for me to speculate on the impact on the region serviced by Southwestern since all of the issues related to the proposed sale are yet to be identified.

Mr. Bevill. What detailed studies have been performed?

Mr. Wilkerson. Southwestern has not made any detailed studies on the defederalization issue.

RATE REFORM

Mr. Wilkerson. What are the estimated returns to the Treasury from SWPA operations with and without the rate reform?

Mr. Wilkerson: I would like to insert for the record a table showing Total Gross Revenue (in thousands of dollars) as projected in the FY 1987 Budget for the period 1986 - 1991:

(The information follows:)

	FY 1986 $	FY 1987 $	FY 1988 $	FY 1989 $	FY 1990 $	FY 1991 $
With Rate Reform	95,400	105,800	108,600	112,600	113,600	122,900
Without Rate Reform	95,400	96,600	97,400	98,600	99,500	98,900
Increase	0	9,200	11,200	14,000	14,100	14,000

SYSTEM RELIABILITY

Mr. Bevill. What is Southwestern Power Administration doing to insure reliability of the transmission system in your area?

Mr. Wilkerson. In addition to the ongoing routine maintenance program of periodic testing of equipment, repairing and replacing defective equipment, and controlling brush growth on transmission line right-of-ways, SWPA has in recent months initiated the following programs:

1. A 36-station microwave system is nearing completion, which will significantly improve the system operators ability to control the power system and respond to system emergencies.

2. SWPA is currently expanding its supervisory control and data acquisition system to 12 Corps of Engineers projects to provide greater capability to the system operator.

3. SWPA has just completed installing 11 power circuit breakers to provide additional interrupting capacity.

4. SWPA will have installed, by April 1986, a new 120 MVA transformer at Weleetka, Oklahoma to replace old transformers with high energy losses.

5. SWPA has just completed, by contract, a comprehensive substation testing program where all bushings, insulators, and oil were tested which identified two incipient faults.

6. SWPA has now completed, by contract, its first complete sonic testing of all wood poles on the system.

7. Completed infrared inspection of all transmission lines and substations, which identified several hot spots that required attention.

8. We have just completed a reevaluation of our power switching instructions, and have finished a revised training and switchover certification program for our employees and will provide a switchman training program for utility systems which do switching which may affect our system.

RATES AND FINANCIAL CONDITION

Mr. Bevill. What is the status of your rates and your current financial condition?

Mr. Wilkerson. I am pleased to report that Southwestern is in good financial condition. All available power is under contract and excellent rainfall coupled with sound rate levels produced revenues in excess of $120 million in FY 1985. Southwestern met its repayment obligations for the fourth straight year, in addition to paying all generation, maintenance, interest, and administrative costs. Timely rate increases have helped maintain good financial status. Southwestern is currently awaiting FERC's confirmation and final approval of a one percent increase for the integrated system.

POLICY ON USE OF GOVERNMENT POWER

Mr. Bevill. Please explain your policy on increased flexibility of the use of Government power.

Mr. Wilkerson. This effort was the result of a SWPA principal policy of "continually seeking ways to better serve our customers while avoiding additional costs." Some customers currently have surplus generating capacity and burdensome transmission expenses, which have helped contribute to cash flow problems. The effort included reviewing SWPA's power marketing policies and practices, involving customers through public participation, and, where feasible, recommending changes which would result in more efficient use of the Federal resources while meeting customers' needs including diminishing the effects of cash flow problems. Two points follow:

Some SWPA customers currently realize little financial benefit from their Federal power allocation. This is because transmission wheeling expenses in our area are normally computed on capacity and customers must wheel through two or three separate systems in order to receive this power. SWPA's flexibility policy will allow those customers with sufficient capacity to schedule their power requirements at a reduced capacity rate, lower their transmission expenses, and receive all of the Federal energy and benefits that they purchased before.

Those with an overabundance of generating capacity can temporarily loan their share of Federal power to another preference entity who is short of capacity, thus benefitting the cash flow of both without affecting the Federal system.

Mr. Bevill. What does this flexibility cost the Government?

Mr. Wilkerson. The increased flexibility offered SWPA's customers does not cost the Government anything. In fact, SWPA anticipates additional benefits will accrue to the Government in terms of a substantial improvement in the utilization of Government resources, as a result of additional generating and transmission line capacity being available to the Government.

"Capacity load" arrangements will not increase or decrease Government revenues. Such arrangements do require modification of customer contracts, and may, in some cases, require development of new arrangements.

Mr. Bevill. Are many customers taking advantage of this flexibility?

Mr. Wilkerson. At present, SWPA's twelve Louisiana municipal customers use the scheduling flexibility to reduce transmission service costs that they incur in moving the Federal energy through investor-owned utilities' transmission systems. This results in significantly lower overall cost for the delivered energy.

Two arrangements are expected to begin around June 1 of this year.

HOOVER POWER PLANT ACT

Mr. Bevill. Please describe the impact of the Hoover Power Plant Act of 1984 on operations of WAPA.

Mr. Clagett. Modification of the Boulder City Area marketing criteria was required by the Hoover Power Plant Act of 1984. The Act also required development of regulations for sale of power from the Boulder Canyon Project beginning June 1, 1987. Revised regulations will be submitted for publication in the Federal Register in the near future. Then, contract negotiations will begin for sale of Boulder Canyon Project power. Rates for sale of Boulder Canyon Project power will be established as required by the Act. A marketing plan for the Federal generation portion of the Navajo Generating Plant was also required by Section 107(c) of the Act. This marketing plan has not been finalized.

Western's November 13, 1981, Guidelines and Acceptance Criteria for the Customer Conservation and Renewable Energy Program was amended August 21, 1985, to comply with Title II of the Act. This has stimulated greater emphasis on Western's customer service function as it relates to the changing conservation and renewable energy technologies. The customer's needs are being met in the form of equipment loans, cost-shared developmental studies, direct technical assistance, technical workshops, and C&RE related publications.

Mr. Bevill. What are the anticipated FY 1986 and FY 1987 funding requirements for WAPA to carry out the provision of P.L. 98-381?

Mr. Clagett. Execution of provisions of the Hoover Power Plant Act of 1984 requires $1.2 million in FY 1986. The Departmental FY 1987 budget request includes $2.9 million of appropriated funds to carry out provisions of this Act.

PURCHASE POWER AND WHEELING INCREASE

Mr. Bevill. Please explain the significant increase in purchase power and wheeling. To what extent are these increased costs offset by increased revenues?

Mr. Clagett. The increase in the FY 1987 purchase power and wheeling program is primarily due to Western's purchase of power from Basin Electric Power Cooperative to help meet Central Valley Project power delivery obligations. This will be the first full year of implementing the contract between Western and Basin for delivery of 185 MW of power. Western will reduce purchases from the Bonneville Power Administration in FY 1987 due to the commitment to purchase Basin Electric Power. This will decrease nonappropriation transfers with BPA, which have offset appropriations in the past. We have also experienced significant increases in capacity charges from Pacific Gas and Electric Company. All increased costs are taken into account in power rate studies.

DEFERRAL IMPACT

Mr. Bevill. Please describe the impact of a deferral of $43.4 million of FY 1986 funds.

Mr. Clagett. The deferral was based on our estimates in January of the level of unobligated appropriation balance from prior years which could have been deferred to fiscal year 1987. The estimates assumed that funds would be available for the following reasons: almost $21 million available as a result of a change in plans for power exchanges with Pacific Gas and Electric Company, over $6 million available because contract awards for construction of power transmission facilities were lower than budgeted, and over $16 million available because less money was required to purchase power. The purpose of the deferral was to identify unneeded funds, not to reduce or delay the power program. Should circumstances change in fiscal year 1986, however, we will reexamine the amount of the deferral.

EMERGENCY FUND

Mr. Bevill. Please describe the status of the continuing emergency fund established in FY 1986.

Mr. Clagett. Language was approved in the Energy and Water Development Appropriation Act for FY 1986 to provide permanent authority for a Continuing Fund to be maintained from Western Area Power Administration deposits to the Reclamation Fund. The goal of the Continuing Fund is to ensure continuous service to Western's customers in the event of an unusual or emergency situation. There have been no emergencies to date in FY 1986 requiring use of the Continuing Fund.

WOOD-POLE TRANSMISSION STRUCTURES

Mr. Bevill. Provide the status of the WAPA program to replace deteriorated wood-pole transmission structures.

Mr. Clagett. Wood-pole replacement is an ongoing activity. Western inspected 533 miles of wood-pole lines in FY 1985 and 219 poles were replaced. Western plans to inspect 838 miles of wood-pole lines in FY 1986 and 1,358 miles in FY 1987. In general, approximately one pole is replaced for every 2 miles of line inspected.

MANITOBA HYDRO PROJECT

Mr. Bevill. Please explain WAPA's role in the Manitoba Hydro project negotiations and the major issues to be resolved for successful completion of negotiations.

Mr. Clagett. At the request of our customers, Western has been involved in discussions and negotiations with the Provincial Government of Manitoba for a possible long-term power supply arrangement from a proposed Canadian hydroelectric powerplant on the Nelson River. Based on our customers' requests and letters of interest in such an arrangement, Western and Manitoba have signed a letter of intent which outlines the basic sales principles. These principles state that Manitoba will build and sell the entire output of a proposed 1,275 MW hydroelectric powerplant for 35 years at a negotiated percentage of the average cost of the next two coal-fired thermal powerplants to be built in the Missouri River area. The proposed powerplant in Manitoba is scheduled to be placed in service between 1995 and 1998. Before the final contractual arrangements can be executed, Manitoba and Western's customers must agree upon the detailed costs and purchase percentage of the proposed thermal alternative. Studies to identify the costs and needed transmission facilities south of the Canadian border are currently underway. Remaining major issues to be resolved are agreement on the costs associated with the thermal alternative, Manitoba's offering on the percentage of those costs, and the amount of participation by each customer. Manitoba would finance and own the Canadian portion of the transmission facilities, and the U.S. portion would be financed by Western's customers.

THIRD AC INTERTIE PROJECT

Mr. Bevill. Please explain the nature of WAPA's current participation in the Third AC Intertie project.

Mr. Clagett. Western is a participant in the plan to construct a new 500-kV line from southern Oregon to California along with 17 other California municipalities, and publically and privately-owned utilities. As a participant, Western is a member of the Project Management Committee and has voting rights in Project decisions. Western has lead Federal agency responsibility for compliance with the National Environmental Policy Act. Western is also responsible for design and construction of all upgraded Western facilities and the associated substation facilities at Tracy Substation and a Redding area substation. The upgrade of 200 miles of an existing Western line is a significant portion of the proposed 330 mile long project. Since the upgraded facilities will remain an important integral part of the Central Valley Project, Western plans to use appropriated funds to proceed with negotiations for perfection of its existing easements along the existing 230-kV right-of-way upon completion of the environmental process.

The portion of the Project for which Western is the construction manager is estimated at about $170 million, and will be totally funded with up-front financing by the other participants. Western is performing all of its reimbursable or upfront funded work under an agreement with the Project Manager - the Transmission Agency of Northern California.

DEFEDERALIZATION TASK GROUP

Mr. Bevill. Please describe the preparations being made for the sale of the Western Area Power Administration.

Mr. Clagett. Western is participating in a Department of Energy task group established to analyze the principal issues involved in defederalizing of the power marketing administrations. The task group is guided by the following principles: seek a fair return to the Federal taxpayers from the defederalization of assets; recognize the benefits currently enjoyed by existing customers; recognize and provide appropriate protections for the personnel benefits of Federal employees; and promote efficient use of scarce and valuable energy resources.

Before implementation of defederalization, the Administration will seek the views of, and promote interest among, concerned groups and individuals, including congressional delegations, State and local officials, current customers, the financial community, and public power and private sector energy interests.

REGIONAL IMPACT OF PMA SALE

Mr. Bevill. What is the estimated impact on the regions serviced by WAPA on the proposed sale? What detailed studies have been performed?

Mr. Clagett. Impacts on the regions serviced by WAPA are not known since detailed studies have not been performed. Impacts on rates charged to customers cannot be determined until a specific proposal for sale of WAPA is available. Based on the proposal, future rates will be affected by the type of buyer, the cost of money, insurance requirements and cost, the impact of Federal and State income tax, as appropriate, the method of depreciation, and the cost of the facilities to be sold.

RATE REFORM REVENUES

Mr. Bevill. What are the estimated returns to the Treasury from WAPA operations with and without the proposed "rate reform"?

Mr. Clagett. In FY 1987, it is estimated that Western will return $285.6 million to the treasury under the current repayment procedure, and $283.0 million under the modified repayment reform proposal, a reduction of

$2.6 million. However, repayment reform would result in Western returning an additional $28.5 million in FY 1988, and $28.6 million in FY 1989.

POWER DISPATCHER SALARIES

Mr. Bevill. Please describe the results to date of the authority given to WAPA to establish comparable salaries for power system dispatchers.

Mr. Clagett. A new salary plan was established based on a survey of 13 utilities within Western's service area. The effective date of the salary plan was November 10, 1985. The results of implementing this plan have been a significant decrease in the attrition rate of our dispatchers and an increase in the overall morale. For the first time in approximately 5 years, Western has a full complement of dispatchers on duty.

RATE REVIEW STATUS

Mr. Bevill. What is the status of approval of WAPA's power marketing rates by the Federal Energy Regulatory Commission?

Mr. Clagett. All of the rate adjustments Western has submitted to the Federal Energy Regulatory Commission have been approved by the FERC. At this time, Western has no rate adjustments which are awaiting action by the FERC.

COMPUTER AIDED ENGINEERING EQUIPMENT

Mr. Bevill. Please describe the WAPA program for acquisition of computer aided engineering equipment in FY 1986 and FY 1987.

Mr. Clagett. Western's acquisition of computer aided engineering equipment includes the purchase of a mainframe computer, individual work stations, and associated software. The mainframe computer will be located in Western Headquarters. Individual work stations will be situated in Western Headquarters and in most Area and District Offices. The acquisition of CAE is needed to obtain higher productivity in design of new transmission facilities and preparation of as-built records of completed facilities in operation. Benefits include increased productivity measured in drawing or design output per engineer; reduced design time; improved quality of design; higher consistency in preparation; and the reduced need for drafting staff.

It is estimated that the total CAE cost will be $7.3 million. The basic system will be procurred in FY 1986. Funding requirements beyond FY 1986 will be for expansion of this basic system to include additional work stations. The initial contract award for CAE is scheduled for August, 1986.

TRACY-LIVERMORE TIE-LINE

Mr. Bevill. Please describe the potential benefits of an intertie line from the WAPA Tracey substation to Livermore.

Mr. Clagett. A short tie-line and associated facilities between Livermore Laboratory and Tracy will provide the Department with several major advantages. First, the reliability and security of the electric power supply to Livermore will be greatly improved. At present, only one line serves Livermore, and that line originates from a very congested substation. Further, the Department has received notification from the servicing utility that transmission limitations are anticipated in the near future. In addition, the tie-line would provide another power source to the laboratory, resulting in a minimal programmatic impact of a single point failure. Second, the line will provide more flexibility to DOE to optimize the allocation of low-cost power to all three Bay Area labs - Stanford Linear Accelerator Center, Lawrence Berkeley Laboratory, and Livermore. This flexibility increases the overall benefit to the Department. It will increase the possible number of operating hours for the Stanford Linear Collider and it will help to alleviate the power reductions presently interrupting the experimental cancer treatment programs at Berkeley. Lastly, the tie-line offers the potential for substantial cost savings, of about $40 million in reduced wheeling costs and possibly an additional $300 million in reduced power costs over an eleven year period.

Mr. Bevill. Does WAPA have authority to construct a Tracey-Livermore intertie?

Mr. Clagett. Yes, Western does have the authority, pursuant to § 302(a)(1)(E) of the Department of Energy Organization Act, 42 U.S.C. § 7152, which transferred to Western "the power marketing functions of the Bureau of Reclamation, including the construction, operation, and maintenance of transmission lines and attendant facilities;". The DOE laboratories are presently firm power customers of Western and the line will provide a direct interconnection with Western's sytem.

Mr. Bevill. What is the cost benefit of such a line?

Mr. Clagett. The potential cost savings to DOE are significant. Cost savings to DOE will come from two sources: avoidance of transmission and other fees associated with present Department power sources and from savings potentially realized by purchasing additional low-cost power from sources obtainable from WAPA. Between 1990, the proposed in-service date of the line, and 2001, savings to DOE are estimated to be $40 million in reduced wheeling costs. Based on this savings, the line could pay for itself in six years. An additional savings of about $300 million in reduced power costs, could potentially be available, depending on how the Department uses its present allocations of low-cost power and what new sources of available low-cost power it secures.

Mr. Bevill. What is the expected funding required by WAPA for this line?

Mr. Clagett. The expected funding required for the Tracy-Livermore tie-line is $18.9 million. The costs for the tie-line portion of the project, including terminal facilities at both ends, are estimated to be $10.4 million. Some additional modifications to the power system within the Lawrence Livermore National Laboratory that would allow full use of the tie-line would require the remaining $8.5 million. Most of the $8.5 million would be needed to accommodated anticipated load growth even if the line were not constructed.

Mr. Bevill. We understand a power line from LLNL to Western Area Power Administration would reduce DOE's utility costs. What is the status and potential benefit of that project?

Mr. Clagett. That project, estimated at $18.9 million, has preliminary approval within the Department, but deferred until FY 1988. Cost savings resulting from the project will come from two sources: avoidance of transmission and other fees associated with power the Department presently receives and from savings realized by purchasing additional low-cost power from WAPA. Further, the line will provide more flexibility to DOE to optimize the allocation of low-cost power to all three Bay Area labs - Stanford Linear Accelerator Center, Lawrence Berkely Laboratory, and LLNL. This flexibility increases the overall benefit to the Department.

Between the proposed 1990 in-service date of the tie-line and 2001, savings to DOE are estimated to be $40 million in reduced wheeling costs. Based on this savings, the tie-line could pay for itself in six years. An additional savings of about $300 million in reduced power costs could potentially be available, depending on how the Department uses its present allocations of low-cost power and what new sources of available low-cost power it secures.

Another benefit, of particular concern to Defense Programs in DOE, is increased security and reliability of power supply. A second line provides two alternate power sources to the lab, resulting in minimal programmatic impact of a single point failure. It also avoids continuity and sufficiency of supply problems due to transmission limitations experienced in the past and anticipated in the future.

BONNEVILLE'S EXPORT RATES TO CALIFORNIA

Mr. Fazio. We applaud Bonneville's very recent efforts to ratchet back its non-firm export rates to California, but wonder how Bonneville might decide unilaterally to fix the actual sales price between the 7 and 22 mill parameter.

Mr. Johnson. The change proposed recently for our nonfirm energy rates has been required to respond to the dramatic market changes brought about by the global decline in oil prices. We are responding to uncertainties facing us in California, especially as the result of actions taken by the California Public Utilities Commission, who are themselves responding to the same unexpected circumstances.

The NF-85 rate schedule was originally designed to ensure in general that BPA can recover the cost of providing nonfirm energy designated by FERC Administrative Law Judge Miller in his decision on our 1981 and 1982 nonfirm energy rates, and to promote efficient and economic displacement of resources. The flexibility available in the proposed revision will be implemented to achieve these same goals: cost recovery and economic resource displacement. The determination of an actual sales price for nonfirm energy exports will depend on a number of parameters. BPA will attempt to clear the market for nonfirm energy on the Intertie to California 1 day in advance, using what are called "preschedules" commitments to sell and purchase made 1 day in advance. This market clearing will aim to minimize revenue underrecovery relative to the cost-based Standard Rate, which is 23.4 mills per kWH. If space remains on the Intertie on the following day, utilities in

California will be able to qualify for additional purchases at lower prices, called Displacement Rates, by identifying and displacing lower cost resources that meet the requirements of the NF-85 rate schedule. These additional sales should allow the Intertie to be filled, but should not jeopardize prescheduled deliveries at rates closer to the cost basis of nonfirm energy.

BPA's proposal to have flexibility to meet the California market by charging rates ranging from 7 to 22 mills is not being taken unilaterally. BPA has reopened the record of its 1985 rate case and given all parties to that case, as well as the general public, an opportunity to comment on the proposed changes. In addition to taking official notice of declining gas and oil prices in California, BPA is relying on the extensive record already compiled in the 1985 rate case, which discusses the need for nonfirm rate flexibility.

Mr. Fazio. Is it consistent with the principle that FERC should review your rates that you simply ask FERC for so much discretion to do what you want?

Mr. Johnson. FERC's job is to review Bonneville's rates to ensure they are sufficient to repay the Federal investment in the Federal Columbia River Power and Transmission System. In a competitive economy energy market it would be difficult to recover revenues adequate to repay the Treasury unless Bonneville had the discretion and flexibility to meet the market. Recent volatility in California's gas and oil market is an example of a situation where BPA needs discretion to follow gas and oil prices as they fluctuate. Lack of discretion in this situation could ultimately damage Bonneville's ability to repay the Treasury.

Mr. Fazio. Bonneville's rate increases from 6.9 to 23 mills in the past 5 years cause California worry because we wonder if the Pacific Northwest is not trying to push too many of its own fixed systems costs on export customers. Your rates seem to reflect escalating sense of what Bonneville's "costs" are. In the past, this has lead to apparent unequal treatment. For example, during periods of hydro surplus, when you seek to displace nuclear or coal generation in the PNW with surpluses of hydro, you offered hydro power to nuclear utilities for 3 mills for each kWh of nuclear shut down and 7 mills to displace coal generation. Yet you were selling essentially the same power to California at 23.5 mills, I understand. Do I understand correctly? Why charge different rates for power that seems strikingly the same?

Mr. Johnson. Before answering the first question at the end of your statement, I would like to clear up some potential misconceptions regarding BPA's costs and the resulting rates for exports to California.

First, the escalation in BPA's costs during the past several years has affected all rates, both for sales within the Pacific Northwest and for exports. Thus, the calculated rates to our utility and industrial customers have increased at approximately the same pace as the Nonfirm Energy Standard rate. BPA has not sought to charge California customers any more than their fair share of BPA's overall costs. This position has been upheld by Administrative Law Judge Miller at the Federal Energy Regulatory Commission, who ruled in November 1984, that BPA's nonfirm energy rates charged from the fall of 1981 through the fall of 1983 were actually too low relative to BPA's costs, including both hydro and thermal resource costs. Judge Miller ruled that it is fair and equitable to assign fixed system costs to nonfirm energy customers. Judge Miller also determined that while BPA must strive to recover the costs of its nonfirm energy, BPA may have to sell below-cost to meet the market. However, below-cost sales should be offset by above-cost sales to the extent possible, so that on average, BPA collects its costs. The approximately 23-mill figure that you cite was determined by BPA to be a correct interpretation of Judge Miller's order as applied to our rates beginning July 1985.

Second, Judge Miller's initial decision on our 1981 and 1982 nonfirm energy rates supports a rate structure that responds to market conditions, which can often differ between the two regions. Judge Miller ordered that although BPA should try to earn average revenues from sales of nonfirm energy equal to our average system cost, it would sometimes be necessary to drop below that average cost level if market conditions dictated. As BPA argued last fall before FERC Administrative Law Judge Leventhal in a case involving our 1983 nonfirm energy rates, there have been times in the past when the Intertie to California was full, with sales made at rates close to our average cost, but additional nonfirm energy was available in the Northwest. In this case, reducing the rate to California could only reduce BPA's revenues, because California utilities actually chose to fill the Intertie at the higher rate. Purchases from BPA at those higher rates were clearly in the California utilities' interest, because they were voluntary purchases made to substitute for higher cost oil and gas generation.

On the other hand, it was not possible to make sales of that available nonfirm energy to Northwest utilities to displace coal and nuclear generation without charging a rate below the cost of those resources. The utilities in the Northwest simply would not buy the energy otherwise, whereas utilities in California clearly benefit from purchases at higher rates if their own generation costs are higher than the rates paid to BPA. The 3-mill and 7-mill rates are available to all purchasers in all regions. Utilities are only eligible to purchase at 3 and 7 mills if they use the energy to shut down or back down nuclear or coal resources in their control. In order to qualify for these lower rates, utilities must demonstrate that it would not be economical for them to purchase at BPA's cost-based rate.

Finally, the 23.4-mill nonfirm energy Standard rate for sales to California has been in place only since July 1, 1985, and due to the unusually dry conditions in the Northwest, almost no energy has been available for sale at that rate since it went into effect. The 3-mill and 7-mill rates have been available since the fall of 1983, but have been used only rarely, in conditions when available nonfirm energy exceeds the market at the cost-based Standard rate in California. BPA has made simultaneous sales at different rates only when supply conditions dictate. Such sales contribute to our overall goal, as stated by Judge Miller, that nonfirm energy sales should on average earn BPA's average cost of production.

Thus, in charging different rates for the "same" energy, BPA has been following two dictates: a ruling of a FERC Judge, and differing market conditions in California and the Northwest. Sound business practice dictates a recognition of these market conditions.

Mr. Fazio. Once oil price rise again, and you are not forced way down to meet alternative market costs competitively, will the BPA seek again to charge seemingly discriminatory rates?

Mr. Johnson. If oil and gas prices rise to levels that make sales at the Standard rate of 23.4 mills again competitive and economic, BPA is required by the rate schedule, FERC rulings on nonfirm energy rates and attention to our repayment obligations to the Treasury to return to that rate level. However, within the terms of our existing nonfirm energy rate schedule, we still would have the ability to charge more than one rate for nonfirm energy, depending on market conditions (both supply and demand), and would do so if required by the considerations I just noted. I would like to note again that the nonfirm energy Standard Rate of 23.4 mills to California is based on BPA's average costs, and was calculated according to Judge Miller's ruling on earlier nonfirm energy rates.

Mr. Fazio. If it is worth more than your strictly incremental costs of marketing nonfirm power, why not go lower than 7 mills? Obviously it is worth dumping it for only 3 mills in the Pacific Northwest?

Mr. Johnson. On occasion in the past BPA has made sales at the 3-mill rate to displace nuclear generation in the Northwest. However, these sales contributed to our goal of earning on average the cost of nonfirm energy, as required by Judge Miller, and could not have been made at higher rates given the costs of the nuclear resources being displaced. This rate is also available for sales to California under the same conditions, if Intertie space is available.

Mr. Fazio. Bonneville has an understandable interest in reducing electric bills to its own consumers and we cannot blame you for wanting to amortize some of your fixed, intraregional systems costs with export revenue. But is it fair?

Mr. Johnson. We believe that this rate design is fair. In fact, Judge Miller decided that to do so was fair, in his ruling on our 1981 and 1982 nonfirm energy rates, and we complied with his order in designing the current nonfirm energy rate schedule, NF-85. In fact, excessively low nonfirm energy rates for sales to California are unfair to Northwest firm power customers, who are placed in the position of subsidizing California sales. There should be no perceived implication that BPA has incurred costs in the past only for the benefit of Northwest customers. In fact that is not the case. As Judge Miller noted, the facilities that produce nonfirm energy were built to provide electricity to consumers both inside and outside the region. Nonfirm energy sales were taken into account when those projects were originally authorized, and it was recognized that many of those sales would be for export. Judge Miller's ruling that BPA's nonfirm energy rates should attempt to recover our average costs was based on his explicit recognition of these facts.

Mr. Fazio. Why should not the BPA's immediate constituencies pay for the real cost of the system that serves them?

Mr. Johnson. BPA's customers in the Northwest do pay for the cost of BPA's system. But as I just pointed out, this system benefits customers both in the Northwest and outside the region, and our nonfirm energy rates for export simply reflect that fact.

Mr. Fazio. Is it wise to peg systems costs to volatile export (i.e., nonfirm) revenue? Should not export revenue be taken as extra revenue with which BPA could accelerate its repayments to the Treasury or at least make up for back deficiencies?

Mr. Johnson. The crediting of revenues from export sales against the revenue requirement for firm sales is a universal practice for the Nation's utilities, public and private, regulated and unregulated. In designing its 1985 rates, BPA addressed the volatility of export revenues as well as revenue uncertainties related to sales to other customers. A conservative estimate of export revenues was calculated by assuming adverse water conditions, resulting in significantly lower estimates of sales and revenues than under average water conditions.

The statutes under which BPA sets rates require that all rates taken together yield revenues that cover costs and BPA's debt obligation to the Treasury. Nonfirm energy rates must make their fair contribution to BPA's overall revenue requirement. The collection of all of BPA's revenue requirement from firm power customers and then collecting additional revenues from nonfirm energy sales would result in overcollection of revenues. Further, if export revenues were designed only to make additional payments to the Treasury, two adverse consequences would obtain: first, our Northwest rates would be significantly higher, harming economic recovery in the region and reducing Federal tax revenues from a region that still lags behind the rest of the country in returning to pre-recession levels of activity and income.

Second, there would be no cost basis for export rates. Without a cost basis that establishes an upper bound on nonfirm export rates, those rates could be set to follow the prices of gas and oil up and down, always set to earn the most possible from the sale. If BPA had used such a rate design in the past, payments by California utilities could have been several times those actually made. In fact, during the period our 1983 rates were in effect, several California utilities paid Western Area Power Administration several times the rates paid BPA, for nonfirm energy that sometimes had lower quality, because Western Area Power Administration cannot guarantee delivery for several days in advance as BPA can.

BPA has chosen to base its rates on its costs. We believe that this provides a wider margin of benefit for California utilities in circumstances where the prices of gas and oil exceed our Standard Rate, and makes an appropriate contribution to meeting our overall level of costs.

Mr. Fazio. You are as aware as anyone of the export potential of the new AC intertie and the upratings of the two existing ones, not to mention the 1000 megawatt uprating of the first DC line to Southern California. Yet at the rates Bonneville is charging now, capacity over the existing lines is only half used, and in the night times the flow is actually from south to north. This is at a time when you are wasting water through your turbines. What would the monthly revenue to Bonneville be if it sold an average of 800 megawatts around the clock at 6.5 mills?

Mr. Johnson. At the present time, usage of the Pacific Intertie is 60 to 70 percent of its available capacity. This situation is largely unrelated to the rates that BPA charges for sales t[illegible]ia. The current underutilization of the Intertie is largely traceable to four factors occurring in California. First, the current abundance of hydro generation throughout California has decreased demand for Pacific Northwest energy. This situation is only temporary. Second, baseload generation in California during night time hours causes California utilities to be unable to use additional resources from the Pacific Northwest. This situation will be alleviated over the longer term as load growth occurs in California. Third, Intertie access is limited or unavailable to many California utilities that otherwise would be willing to purchase energy from the Pacific Northwest. This situation will occur only so long as the current Intertie constraints exist. Fourth and finally, current low natural gas and oil prices encourage additional generation in California that adversely affects any imports of energy. Again, this situation will exist only so long as gas and oil prices remain abnormally low.

These factors are not chronic long term impediments to sales from the Pacific Northwest to California. During October 1985, for instance, the Intertie was used at about 85 percent of its available capacity, even though BPA was selling at rates much higher than those currently in effect. Even since the drop in oil and gas prices in February, 1986, the Intertie has been utilized to its full capability numerous times on peak hours, and on February 10, for instance, the Intertie was used at about 86 percent of its full capability for the day.

In response to your question about a hypothetical sale, if BPA sold 800 megawatts at 6.5 mills per kilowatthour, the resulting revenues would be about $3.8 million per month. However, that revenue would not be realizable at this time. If 6.5 mills per kilowatthour became BPA's market clearing price, BPA revenues would be decreased because BPA would be unable to expand its sales enough to offset the decrease in price of sales currently being made at higher rates.

Mr. Fazio. If Bonneville's rates are too high for the existing lines, they would be too high for California to capitalize new interties or upratings. If you set your prices within the 7-22 mill range, will you leave room to assure reasonable discounts below California's alternatives so it will be in California's interest to finance these lines?

Mr. Johnson. There are two ways of justifying additional interties. One is through additional economy energy sales and the other is through firm contracts that will give California capital deferment benefits. Depending on what oil and gas prices are in the future, both are necessary to justify the 3rd AC.

Future oil and gas prices are the key to whether the 7-22 mill rate will be sufficient to displace California's displaceable resources and give them a margin of profit. Under current oil and gas price projections, California would find a 7-mill economy energy purchase economic to displace most, if not all, of their displaceable resources or displaceable purchases.

THIRD AC RIGHT-OF-WAY ACQUISITION

Mr. Fazio. When this Subcommittee first authorized the construction of the third AC to California, we had the view that the Department of Energy and WAPA particularly could help by making right-of-way available where it already exists in the Central Valley and by helping acquire it where it does not. Part of the line's contribution to systems reliability is attributable to a new route through the mountains of Northern California and into Oregon. Does WAPA have sufficient authority to help the intertie participants acquire right of way?

Mr. Clagett. Yes. Western has the authority, under the provisions of the Reclamation Act of 1902 and the Reclamation Project Act of 1939, to acquire the right-of-way and to grant sufficient rights in the right-of-way to accommodate the project. Broad authority was also provided in Public Law 98-360 which authorized the Project.

RATE INCREASES FOR THE CENTRAL VALLEY PROJECT

Mr. Fazio. My constituents within the Sacramento Municipal Utility District have experienced a 28 percent increase in rates over the past year. Much of this increase has been attributable to the increases in CVP rates. The CVP supplies SMUD with 360 megawatts, a bit under one-third of its supply. The CVP has raised its rates four times in FERC's pre-approved steps to reach a 36.16 composite rate, up from 16.89 mills in 1983. A fifth hike to 39.63 mills is contemplated this coming October. Does WAPA anticipate raising CVP rates any more after October 1?

Mr. Clagett. Western does not anticipate a rate increase after this coming October, when the final step approved by FERC becomes effective. The rates for the CVP were approved for a 5-year period ending May 1988. Next year Western will initiate a rate adjustment for the period after May 1988. Current power repayment studies show that the last step produced adequate revenue through 1990. However, some change in rate design may be desirable. New power repayment studies will be completed later this year and in 1987 in preparation for the 1988 rate review to verify this assessment. CVP preference customer rates should be expected to increase to some degree after 1990 due to projected increasing costs of capacity and energy to support our existing customer load level of 1132 MW.

Mr. Fazio. On what have the previous rate increases been based?

Mr. Clagett. The power repayment study, which serves as the basis for determining needed revenues and rates, prepared following FY 1981 showed the need for a substantial increase of rates in order to meet expected annual expenses, recover previous deficiencies, and repay the Treasury within the allowed repayment periods. Because the needed increase was so large, Western decided to spread the increase over several years and have smaller increases each year. This was possible due to the fact that Western is able during this same time to purchase power from PGandE from Bank Account No. 1 at low cost. The increase in October will be the last of the step increases approved by the FERC for the five year period ending in May of 1988.

Mr. Fazio. Are we now at a point where WAPA will have reached full repayment and in fact is charging above current costs to repay some past deficiencies?

Mr. Clagett. Western sets its rates at a level which, with a stable economy and reasonably accurate estimates of future costs, will repay each obligation within its allowed repayment period. DOE policy requires that past deficits be repaid ahead of making additional payments of principle. The CVP had 10 deficit years prior to 1983 which resulted in a cumulative deficit of over $200 million. The present revenues in excess of annual expenses are being applied to repay those past deficiencies rather than repay principle. Once the deficiencies have been eliminated, then revenues in excess of annual expenses will be applied to repay principle. However, it is expected that the Bank Account No. 1 with PGandE will be depleted at about the same time as the deficit is repaid. Thus, purchase power costs will increase significantly at that time reducing the amount of revenue available to be applied to principle repayment.

Mr. Fazio. What might cause rates to rise further?

Mr. Clagett. Things that might cause rates to rise further are increased costs of purchased power; inflation causing operation, maintenance, and replacement costs to increase; and adverse water conditions causing the need to purchase more power.

INDIAN WATER RIGHTS

Mr. Fazio. A plan is afoot to wheel Central Valley Project Water to San Diego County to resolve an Indian water rights issue. The plan contemplates use of "project power." Could you please explain the difference between "project power" and your other principal rates to preference customers and other customers?

Mr. Clagett. The traditional "rate" for project use power for the CVP power has until recently been 2.5 mills/kWh. However, it is currently 4.67 mills/kWh. This "rate" is an accounting mechanism used to transfer certain power operation and maintenance costs to the Bureau of Reclamation to be covered by water sales. Historically, power for project uses has been limited to that necessary to operate pumping facilities of the CVP, as well as station service and certain other purposes necessary for supporting the operations of the CVP. The composite rate for CVP firm power is presently 36.16 mills/kWh, with an anticipated increase to 39.63 mills/kWh effective on October 1, 1986.

SALE OF PMAs

Mr. Fazio. The Administration has proposed selling the power marketing administrations for the value of their unamortized investment. Some $12.4 billion is anticipated to off-set our deficits in FYs 89-90-91 or thereabouts. How will the Administration set about implementing this scheme?

Miss Fitzpatrick. The Department and the Administration intends to pursue defederalization through an open, competitive process. Task groups will be established to look at all possible options. Before implementation of defederalization, we will seek the views of concerned groups and individuals, including congressional delegations, State and local officials, current customers, the financial community, and public power private sector energy interests.

Mr. Fazio. What funds will it use?

Miss Fitzpatrick. We have not identified that this process will require additional funding beyond that included in DOE's and the power marketing administrations' budget requests.

Mr. Fazio. Would whole systems be intact or dismembered?

Miss Fitzpatrick. We would prefer to sell meaningful power systems. This could mean selling an entire PMA or logical subsystem. As the defederalization efforts proceed and issues such as the sale of logically divisable units are identified, objective studies may be undertaken to assist in the decisionmaking process. At present, we have not performed any studies on the results of subdividing the PMAs.

DEBT REPAYMENT

Mr. Fazio. Is it not true that all the power marketing administrations are now amortizing their annual debts satisfactorily including Bonneville, and that Bonneville has now come to a point where it too will cover operating costs and repay its capital principal and interest?

Miss Fitzpatrick. I am pleased to say that in FY 1985 all the PMAs amortized their investments according to their schedules.

Mr. Fazio. In any sense then, are the PMAs "drains" on the Treasury?

Miss Fitzpatrick. Certain repayment practices which allow the PMA's to delay in making payment on the unamortized balance of the old appropriated investments within their useful life and repaying the highest interest bearing debt first are drains on the Treasury. Much of the debt is earning interest for the Treasury at substantially lower rates than the Treasury has to pay to continue financing the debt.

Mr. Fazio. For instance, the Western Area Power Administration had a total investment of $4.1 billion and $1.8 billion of that has been repaid. In FY 1985, WAPA had $613 million worth of revenues, covered operating costs of $311 million, then its regular principal and interest obligations of $80 million, then made a positive contribution towards reducing debt of another $258 million. Our own CVP, which has undergone its rate shocks lately, will have revenues in FY 1987 of $271 million with operating costs of $117 million, for $154 million flow of revenues over costs. Is the CVP a "drain" on the Treasury?

Miss Fitzpatrick. No. As long as the CVP continues to make scheduled payments of principal and interest, the CVP will continue to reduce the level of the unpaid federal investment.

PMA REVENUES

Mr. Fazio. Is it not true that existing law provides that PMA facilities as they are amortized continue to raise revenue and that this revenue goes into the Treasury as sheer profit?

Miss Fitzpatrick. Under existing law, the PMAs are required to return to the Treasury the principal associated with investments in the respective power systems financed by appropriations and/or Treasury bonds, interest on the balance of unpaid principal, and any irrigation assistance assigned to be paid from power revenues. In addition, the PMAs pay all operation and maintenance expenses for the power systems. Existing law provides that as individual investments are repaid by the power marketing administrations, these investments continue to be used to support the repayment of other investments both old and new. The law does not authorize the pricing of federally-generated power to provide profit.

INTEREST RATES

Mr. Fazio. Can you please provide the Committee with the interest rates applicable against major features of the four PMAs in the lower 48 states, and compare the cost of amortizing those facilities at those rates against the cost of amortizing the same facilities at current market rates as they would be when refinanced through the privatization proposal.

Miss Fitzpatrick. Since we have just begun our detailed defederalization studies, I can not tell you what the financing terms and conditions would be for sale of the four PMAs in the lower 48 states. I can tell you that as of the end of fiscal year 1985, these PMAs were paying the following average interest rate on their unamortized appropriated investments: BPA - 3.2%; SEPA - 3.6%; SWPA - 2.8%; and WAPA - 3.4%. Also, as of the end of FY 1985, I am informed BPA was paying 12.3 percent on its outstanding long-term borrowing of $1.14 billion and 8.2 percent on its outstanding short-term borrowing of $200 million. The current yield on 30 year U.S. Treasury bonds is approximately 8.0%.

THIRD AC LINE RIGHT-OF-WAY

Mr. Fazio. We have noted the role that WAPA has played in facilitating the Third AC line from California to Oregon, and note that the participants in the line wish WAPA's continued assistance in the obtaining of right-of-way. Would there be any entity with WAPA's capabilities and authorities to assist in endeavors of this sort if the privatization proposal were to come to fruition?

Mr. Clagett. I am not aware of any non-Federal entity that would have Western's authorities and responsibilities in land acquisition. Non-federal utilities typically use other methods and authorities for acquiring right-of-way. At times, this includes use of state government powers of eminent domain.

DEFERRED PROJECTS

Mr. Fazio. One of the distressing aspects of the privatization proposal is for the period of years while the Administration persists in proposing it the PMAs must act as though it might happen even if it never should. Can you list for us please any projects or improvements the PMAs were to have made but were dropped from this year's budget request in deference to the presume abrogated federal role pursuant to privatization?

Miss Fitzpatrick. There has been no action to end or delay any projects or improvements as a result of the defederalization efforts. The PMAs budgets are principally a current services budget which contains estimates of ongoing program activities while major policy changes, such as repayment reform and defederalization are identified separately as legislative initiatives.

Mr. Fazio. Please explain why it is that the Central Valley Project is so far out ahead of other projects in its repayment? Is there any particular characteristic of the CVP which has resulted in this excellent record?

Mr. Clagett. The Central Valley Project is not ahead of other WAPA projects in its repayment. It has repaid about 31 percent of its investment to date. The Boulder Canyon Project has repaid about 71 percent, the Colorado River Storage Project has repaid about 47 percent, the Pick-Sloan Missouri Basin Program has repaid about 45 percent, and recent information indicates that the Parker-Davis Project repayment is essentially complete.

SALE REVENUES

Mr. Fazio. Could you please list for the record the total amount the Administration proposes to realize from rate reform, and break that out on a PMA by PMA basis.

Miss Fitzpatrick. The total amount the Administration proposes to realize from the PMAs as a result of repayment reform between FY 1987 and FY 1991 is inserted for the record.

(The information follows:)

1987 BUDGET PROPOSAL - REVENUES REALIZED FROM REPAYMENT REFORM

(In millions of dollars)

PMA	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	TOTAL
APA	.7	.3	2.6	2.4	2.0	8.0
BPA	139.0	115.0	113.0	115.0	111.0	593.0
SEPA	12.8	12.7	13.8	17.7	20.1	77.1
SWPA	9.2	11.2	14.0	14.1	14.0	62.5
WAPA [1]	-20.1	14.4	18.4	30.0	26.0	68.7
Total	141.6	153.6	161.8	179.2	173.1	809.3

[1] The FY 1987 budget had assumed no impact due to straight line amortization for Western. Above table for WAPA excludes interest differential for the CRSP and Pick-Sloan projects resulting from repayment reform.

SITE C AND THE THIRD AC INTERTIE

Mr. Dicks. How would Site C affect intertie planning for the 3rd AC line?

Mr. Johnson. Justification for the 3rd AC is based on both sales of nonfirm energy to California and agreements on firm contracts for power between the Northwest and Canada, and California. Site C export to California is the type of transaction that enhances the economic viability of the 3rd AC by adding to the economic transactions needed for its justification. A Site C transaction would not change the current planning schedule for the 3rd AC which includes California PUC certification of the line for construction by early 1988 and completion of the line in 1991.

Mr. Dicks. Wouldn't the 3rd AC capacity be needed for the large amount of power that might come from this 900 megawatt hydro project?

Mr. Johnson. It is BPA's position that a necessary, but not sufficient condition, for export of power to California from Site C is completion of the 3rd AC line. An export of this magnitude to California would have a significant impact on access to the intertie by Northwest utilities. Such a transaction would be unacceptable to the Northwest without additional capacity that is represented by the 3rd AC line. Even with the 3rd AC line, BPA must assure itself that the impacts of a transaction through the BPA system will preserve its obligations to repay the U.S. Treasury for investment in the Federal Columbia River Power System, protect BPA's rates to its customers, and operate and plan the Federal Columbia River Power System pursuant to applicable law in an economic and efficient manner.

RESIDENTIAL EXCHANGE

Mr. Dicks. I have one final question on the residential energy exchange. First, can you give us a brief summary of the purpose behind this program?

Mr. Johnson. In the 1970s, when it appeared that BPA's supply of power was insufficient to meet the needs of all utilities in the region, the investor-owned utilities were legally denied access to Federal power. As a result, their rates began to rise faster than those of the publicly-owned utilities.

In December 1980, the Pacific Northwest Power Act created the Residential Exchange Program to extend the benefits of low cost Federal power to 2.5 million homes and small farms served by investor-owned utilities, as well as those served by participating publicly-owned utilities. The Residential Exchange program provides a subsidy to cover some of the resource costs of participating utilities. The subsidy is passed on directly to residential and small farm customers of the exchanging utilities.

Mr. Dicks. I have a copy of a chart here, published by BPA, that shows where the benefits from the exchange have gone. According to the chart, Oregon IOUs have received almost $520 million from the exchange, while all five remaining participating states combined have received less than $250 million. Washington's portion of this is about $122 million. Why is this happening?

Mr. Johnson. There are two reasons why Oregon is receiving more benefits from the Residential Exchange Program. First, more Oregon ratepayers are served by IOUs. Second, because Oregon IOUs own fewer hydro facilities, they serve their customers with higher cost coal and nuclear resources. This means Oregon IOU's have higher "average system costs" of resources.

Here is how the exchange takes place. First, a utility with its own generating facilities, either investor-owned or publicly-owned, acquires low cost electric power from the Federal system through BPA. Second, BPA buys back the same amount of power from the utility at the utility's "average system cost" of resources; these resources include power purchases and conservation measures. In effect, BPA is required to buy high and sell low. Third, the utility then passes on the benefits of this exchange to residential and small farm customers in the form of lower rates. Because Oregon IOUs have higher average system costs, they receive more benefits.

Mr. Dicks. Does this mean that Washington State public ratepayers are subsidizing Oregon privates to the tune of over $500 million dollars?

Mr. Johnson. This does not mean Washington State public ratepayers are subsidizing Oregon privates to the tune of over $500 million dollars. Prior to July 1, 1985, BPA's Direct Service Industry customers paid most of the costs of the Residential Exchange, as directed by the Pacific Northwest Power Act. After July 1, 1985, all BPA customers pay the costs of the Residential Exchange.

Mr. Dicks. What are the effects of this exchange?

Mr. Johnson. The Residential Exchange has had two major effects. First, it has lowered the difference in rates paid by residential ratepayers of investor-owned and public utilities. Second, it has raised BPA's revenue requirement and as a result has raised rates paid by all BPA customers.

BUY AMERICAN COST

Mr. Rudd. Section 506 of P.L. 99-141 provides that agencies shall determine the incremental costs associated with implementing the "Buy America" requirement and defer or offset such incremental costs against otherwise existing repayment obligations. Does the Western Power Administration anticipate purchasing the type of high power EHV equipment defined by committee report #99-195, and if so what is the estimated revenue impact? If the revenue impact has not yet been calculated, will the Agency do so and supply the subcommittee with these numbers at a later date? Do you have planned purchases of EHV electrical power equipment in FY '87? What is the total cost of that purchase?

Mr. Clagett. Although Public Law 99-141 provides for a 25 percent comparison, actual domestic and nondomestic bids may differ by less than 25 percent. It is, therefore, too early to provide specific answers. Western currently plans to expend about $16.4 million for the purchase of extra high voltage equipment by the end of FY 1986 and $10.9 million for FY 1987. Incremental costs and revenue impacts associated with the Public Law cannot be determined until equipment bids are received and evaluated later this spring. We will supply to the subcommittee, at a later date, the revenue impact of Section 506 of Public Law 99-141.

FOREIGN IMPACT OF BUY AMERICAN

Mr. Rudd. Do you think that this type of "Buy America" provision could have a harmful impact on our relations with those trading partners, such as Switzerland and Sweden, with whom we enjoy a very favorable balance of trade? Do you believe that an appropriations measure is the appropriate vehicle to deal with a complex trade issue that could have significant trade policy consequences? The Japanese market for such high voltage equipment is basically closed to U.S. producers. Could Japan benefit from the "Buy American" provision in any way? Are the Japanese not the supplier of parts to domestic producers of such equipment?

Miss Fitzpatrick. I am sympathetic to the pressures faced by domestic EHV vendors when they are confronted by competition from offshore vendors whose prices may have been made especially attractive by the relative strength of the dollar against other currencies in the last several years. I can understand the efforts last year to increase the "Buy American" cost differential during FY 1986 to 25 percent.

The Administration objected to this statutory approach, at that time, because history has shown that the passage of such legislation would do more harm than good to the American economy. This is still the Administration's position. Recently, Commerce Secretary Baldridge communicated this position in testimony before the Congress. Since I last appeared before this subcommittee, the price of the dollar has fallen 39 percent against the Japanese yen; 38 percent against the Swiss franc, and 22 percent against the Swedish krona.

The Administration is very encouraged by this development and is hopeful that this enhancement to the competitive position of the domestic EHV industry will obviate the need for continuation of special one year consideration provided the domestic EHV industry in the FY 1986 Energy and Water Development Act. It is our understanding that Japanese manufacturers also furnish electrical components for EHV power circuit breakers to domestic equipment vendors. The resulting EHV equipment produced is then considered to be a domestic equipment acquisition.

EHV DOMESTIC MANUFACTURERS

Mr. Rudd. Could you tell us how many domestic manufacturers of direct current EHV power equipment there are? Who are these manufacturers? Does this "Buy America" provision not guarantee these one or two domestic producers of direct current EHV power equipment sole access to the federally funded procurement market? Does this not create a legal monopoly? Does this not deny access to foreign technology which may be at a more advanced stage of development?

Miss Fitzpatrick. Currently, the General Electric Company is the only known domestic manufacturer of direct current valves and transformers of the type used in DC systems installed in the United States. The "Buy American" provision would limit or curtail access of foreign firms in the market notwithstanding that foreign firms produce or acquire many components for systems domestically. This would deny access to foreign technology which at times has been at a more advanced state of development, particularly in the areas of AC/DC valves and control systems.

COMPETITION IN CONTRACTING ACT

Mr. Rudd. Could you comment on the interplay of this new provision with the Competition in Contracting Act? Are all federal agencies not obligated to comply with the Competition in Contracting Act?

Miss Fitzpatrick. The Department of Energy does not envision any legal conflicts between the new provision and the Competition in Contracting Act. As Federal agencies all procurement actions of the Alaska Power Administration, Southeastern Power Administration, Southwestern Power Administration, and Western Area Power Administration are in strict compliance with the Competition in Contracting Act. The purpose of the Competition in Contracting Act is to reduce cost to the Government through use of increased use of competition. The 25 percent Buy American differential would certainly present a barrier to competition from foreign firms since that is its purpose. BPA is concerned that the use of a 25 percent differential may not only reduce competition from foreign firms but may, in fact, eliminate them as competitors for certain categories of equipment. Mr. Johnson will elaborate on the application of the Competition in Contracting Act in relation to the Bonneville Power Administration.

Mr. Johnson. Most federal agencies are obligated to comply with the Competition in Contracting Act. While BPA is not legally obligated to comply pursuant to an exception from the Federal Property Act of 1949 which the competition in Contracting Act amended, it has adopted most of the provisions of that Act as a matter of policy since they represent good business practice.

BUY AMERICAN

Mr. Conte. Mr. Johnson, it is a pleasure to see you again and to have this chance to talk a little bit about the Bonneville Power Administration. Let me begin with a general background questions. What is the source of Bonneville's procurement authority--does it come under the Federal Acquisition Regulations or some other regulatory framework?

Mr. Johnson. BPA's procurement authority is found in the Bonneville Project Act of 1937. Primarily, those authorities are found in 16 U.S.C. 821(a)(f) and 16. U.S.C. 832(g) although those authorities have been amplified by subsequent legislation such as the Federal Columbia River Transmission System Act and the Pacific Northwest Power Act. In order to make its procurement operations as efficient as possible for the benefit of its ratepayers, BPA has elected under the provisions of 40 U.S.C. 474(d)(20) to follow its own regulatory framework which is known as the Bonneville Acquisition Guide. Those regulations are patterned after the Federal Acquisition Regulation so that individuals who are familiar with basic Government regulations can quickly locate similar matters in BPA's regulations.

Mr. Conte. Mr. Johnson, leaving aside historical and current legal considerations, is there any strong policy reason that Bonneville should be governed by different procurement requirements and regulations than the other Power Marketing Administrations?

Mr. Johnson. BPA is charged by law with the responsibility to provide the lowest possible electric power rates to its customers and to generate a sufficient amount of revenue to pay its bills as they are due.

BPA would follow those directives as a matter of policy even if they were not required by law since they represent good business practice.

BPA is a self-financed agency with electric load growth responsibility to its ratepayer customers. Because of the unique responsibilities placed on it, BPA has been authorized to make expenditures from a self-financed revolving fund, subject to such directives or limitations as Congress may include in an appropriations act. The financial and procurement flexibility available to BPA have been provided as tools to help us conduct business matters like a private utility to meet our obligations. While our authorities are different from the other Power Marketing Administrations in the Department of Energy, they more closely resemble those of the Tennessee Valley Authority which is a similarly situated, self-financed electric load growth utility.

Mr. Conte. Mr. Johnson, under the Buy American Act, the Head of an agency or Department is permitted to adjust the so-called "Buy American Differential" upon a finding of National interest. Do you have that authority as the Administrator of Bonneville, or would the Secretary of Energy make that determination in the case of a Bonneville Power Administration procurement?

Mr. Johnson. The Buy American Act provides that only the head of an Agency or Department is permitted to adjust the Buy American differential which, in the case of BPA, is the Secretary of Energy. The issues surrounding the modification of the differential include overall Department of Energy procurement policy issues and precidents, balance of trade, balance of payments, and international relations which are beyond the scope of a regional wholesale power utility such as BPA to determine.

Mr. Conte. Mr. Johnson, would you provide a listing for the record of Bonneville's procurements of EHV equipment, as defined in last year's Energy and Water Conference Report, during the past ten years, along with the bidders' nationality?

Mr. Johnson. I will be glad to provide that information in a table I will submit for the record. In this table we have included all of BPA's high voltage procurements during the period FY 1977 through FY 1986, including items not specifically identified in the Conference Report.

(The information follows:)

Bonneville Power Administration

Summary of Foreign and Domestic EHV Acquisition FY 77 - FY 86:

	Domestic($)	Foreign($)	Total ($)
FY 77	32,435,746	7,651,147	40,086,893
FY 78	6,701,028	8,084,972	14,786,000
FY 79	14,097,088	6,400,343	20,497,431
FY 80	36,523,295	13,347,814	49,871,109
FY 81	47,818,985	20,087,657	67,906,642
FY 82	24,897,576	34,471,657	59,369,233
FY 83	19,712,691	7,310,207	27,022,898
FY 84	61,561,732	10,957,822	72,519,554
FY 85	12,817,699	2,359,587	15,177,286
FY 86	56,454,591	0	56,454,591
TOTAL	313,020,431	110,671,206	423,691,637

	Domestic($)	Foreign($)	Total ($)
Total FY 77-82	$162,473,718	$90,043,590	$252,517,308
% of total $$	64%	36%	
Total FY 83-86	$150,546,713	$20,627,616	$171,174,329
% of total $$	88%	12%	

3630B

Bonneville Power Administration

FY 77

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
7194A	02/16/78	Westinghouse	D	D	29,490		Capacitors
7150N	01/18/77	Westinghouse	D	D	98,000		Capacitors
7001A	03/31/77	Cogenel	F France	F		1,698,200	Circuit Breakers
7157A	08/15/77	Copperveld, Bimetallice Div.	D	D	235,232		Conductor
7232A	06/16/77	Reynolds Metal	D	D	18,952,200		Conductor
7303A	06/17/77	Alcoa Conductor Products	D	D	172,790		Conductor
7232B	05/20/77	Alcoa Conductor	D	D	77,582		Conductor
7286A	08/23/77	Gardiner Mfg.	D	D	175,420		Conductor Hardware
7286B	08/23/77	Lindsey Mfg.	D	D	161,534		Conductor Hardware
7286C	08/23/77	NGK-Locke	D	D	40,545		Conductor Hardware
7286D	08/23/77	Columbia Forge	D	D	31,199		Conductor Hardware
7263A	06/21/77	Alcan Cable West	D	D	235,812		Conductor Hardware
7264A	05/26/77	Pengo Div. of .O.I.	D	D	39,057		Conductor Hardware
7152B	02/16/78	NGK-Locke	D	D	171,456		Conductor Hardware
7154A	02/18/78	S & C Electric	D	D	52,106		Fuse Units
7309A	08/03/77	NGK-Locke	D	D	65,670		Insulator
7217A	05/06/77	NGK-Locke	D	D	341,722		Insulator
7181N	04/18/77	Ohio Brass	D	D	44,400		Insulator
7215A	03/31/77	NGK-Locke	D	D	1,282,198		Insulator
7177N	02/09/78	Ohio Brass	D	D	29,992		Insulator
7118A	02/11/78	NGK-Locke	D	D	1,155,063		Insulator
7188N	02/04/78	NGK-Locke	D	D	35,525		Insulator
7399A	09/21/77	Willamette Mfg. & Supply	D	D	349,995		Tower Steel
7253A	07/08/77	American Pole	D	D	113,464		Tower Steel
7283A	06/14/77	Muskogee Iron Works	D	D	107,252		Tower Steel
7296A	06/24/77	Willamette Mfg. & Supply Co.	D	D	100,327		Tower Steel
7297A	06/17/77	Willamette Mfg. & Supply Co.	D	D	43,316		Tower Steel
7207A	05/16/77	Bethlehem Steel	D	D	2,702,523		Tower Steel
7207B	05/20/77	U.S. Steel Corp.	D	D	4,363,960		Tower Steel
7216A	03/31/77	Willamette Mfg. & Supply	D	D	207,779		Tower Steel
7143A	03/31/77	Willamette Mfg. & Supply	D	D	64,729		Tower Steel
7143B	03/31/77	Calfred Industries	D	D	26,233		Tower Steel
6504A	02/25/78	Nissho-Iwai	F Japan	F		3,747,989	Tower Steel
7246N	09/12/77	Mitsui	F Japan	F		1,880,691	Transformers
7280A	06/01/77	Brown Boveri	F Switzerland	F		69,717	Transformers
7131A	02/28/78	Legnano Electric	F Italy	F		254,550	Transformers
7131B	02/28/78	McGraw-Edison	D	D	354,614		Transformers
7131C	02/28/78	Westinghouse	D	D	574,561		Transformers
		TOTAL			32,435,746	7,651,147	

FY 78

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
0960	06/08/78	General Electric	D	D	145,319		Capacitors
1380	06/05/78	Westinghouse	D	D	148,032		Capacitors
7350A	10/28/77	General Electric	D	D	285,611		Capacitors
0822	12/30/77	Brown Boveri Corp.	F Switzerland	F		773,220	Circuit Breakers
0821	12/30/77	Cogenel	F France	F		613,152	Circuit Breakers
7430A	11/02/77	Kilsby Tube Supply	D	D	83,831		Conductor
1460	04/10/78	Reynolds Metals	D	D	69,435		Conductor Hardware
2130	07/14/78	Modulus Corp.	D	D	174,724		Conductor Hardware
7427A	09/30/77	AMP Special Ind.	D	F Canada		28,960	Conductor Hardware
7396A	09/30/77	SA Electric Trans.	F	F		456,640	Conductor Hardware
7396B	11/04/77	Bethlehem Steel	D	D	362,218		Conductor Hardware
0300	12/07/77	S & C Electric	D	D	36,278		Fuses
7327A	09/27/77	NGK-Locke	D	D	488,516		Insulator
1520	03/24/78	Sediver, Inc.	D	D	130,264		Insulator
7327B	10/25/77	Sediver, Inc.	D	D	1,249,916		Insulator
1690	09/22/78	ASEA	D	F		3,333,900	Reactors
1983	06/21/78	Westinghouse	D	D	58,478		Relays
1370	05/24/78	Vulcan Steel	D	D	345,896		Tower Steel
0880	05/31/78	ITT Meyer Ind.	D	D	82,666		Tower Steel
2200	08/15/78	Willamette Mfg.	D	D	36,260		Tower Steel
2910	09/26/78	Muskogee Iron Works	D	D	35,387		Tower Steel
0029	11/17/77	Northwest Tube	D	D	44,254		Tower Steel
0570	03/17/78	Westinghouse	D	D	594,000		Transformers
2100	06/01/78	Westinghouse	D	D	54,187		Transformers
1990	08/14/78	American Elin	F Austria	F		2,879,100	Transformers
3190	09/28/78	Siemens-Allis	D	D	1,780,095		Transformers
0740	12/28/77	Westinghouse	D	D	495,661		Transformers
		TOTAL			6,701,028	8,084,972	

Bonneville Power Administration

FY 79

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
10491	4/6/79	General Electric	D	D	726,021		Capacitors
11578	12/13/78	Brown Boveri Corp.	F Switzerland	F		315,458	Circuit Breakers
12811	3/30/79	Siemens-Allis	D	D	63,500		Circuit Breakers
10120	12/6/78	ALCOA	D	D	147,489		Conductor
12404	2/2/79	Kilsby Tube Supply	D	D	25,671		Conductor
11485	2/7/79	Anaconda Aluminum	D	D	38,632		Conductor
12652	3/8/79	ALCOA	D	D	73,872		Conductor
11955	6/12/79	ALCOA	D	D	1,151,941		Conductor
13222	6/14/79	ALCOA	D	D	3,300,452		Conductor
14709	7/19/79	Reynolds Metals	D	D	106,747		Conductor
14556	8/3/79	ALCOA	D	D	83,941		Conductor
14583	8/10/79	Kanematsu-Gosho	F Japan	F		52,433	Conductor
16437	9/20/79	NGK Locke	F Japan	F		28,568	Conductor
10991	1/29/79	S & C Electric	D	D	26,489		Fuse Units
11986	4/18/79	Lapp Insulator	D	D	78,173		Insulator
13450	9/26/79	Sediver, Inc.	D	D	404,460		Insulator
16644	9/27/79	NGK Locke	D	D	535,550		Insulator
10823	11/3/78	Hitachi	F Japan	F		821,562	Reactors
11064	11/15/78	ASEA	F Sweden	F		218,845	Relays
10916	2/13/79	Ohio Brass	D	D	115,608		Surge Arresters
15972	9/21/79	General Electric	D	D	91,300		Surge Arresters
10571	12/8/78	Nissho-Iwai	F Japan	F		679,825	Tower Steel
10882	1/18/79	Potomic Iron Works	D	D	181,892		Tower Steel
11085	1/15/79	Willamette Mfg.	D	D	269,578		Tower Steel
11981	4/26/79	Willamette Mfg.	D	D	77,414		Tower Steel
14016	4/26/79	Great Western Steel	D	D	33,698		Tower Steel
14014	5/4/79	Willamette Mfg.	D	D	57,808		Tower Steel
12014	5/24/79	ITT Meyers Ind.	D	D	371,742		Tower Steel
14431	8/3/79	Willamette Mfg.	D	D	101,116		Tower Steel
14432	8/21/79	Muskogee Iron Works	D	D	59,339		Tower Steel
14752	9/14/79	Willamette Mfg.	D	D	39,200		Tower Steel
14707	9/14/79	Willamette Mfg.	D	D	215,308		Tower Steel
15129	9/14/79	Nichimen	F Japan	F		1,181,735	Tower Steel
13436	9/14/79	Nissho-Iwai	F Japan	F		725,130	Tower Steel
12840	2/16/79	Pacific Power & Light	D	D	52,897		Transformer
10284	2/1/79	General Electric	D	D	67,038		Transformers
12477	2/1/79	Electromagnetic Ind.	D	D	230,010		Transformers
12478	2/1/79	Emile-Haefely	F Germany	F		60,897	Transformers
10427	12/21/78	Cogenel	F France	F		147,540	Transformers
10674	1/31/79	General Electric	D	D	1,680,789		Transformers
10646	2/12/79	American Elin	F France	F		1,317,300	Transformers
11086	2/14/79	Westinghouse	D	D	29,000		Transformers
14648	6/6/79	Emile-Haefely	F Germany	F		37,050	Transformers
13197	7/3/79	Italtrafo	F Italy	F		814,000	Transformers
14041	7/11/79	General Electric	D	D	86,321		Transformers
15238	7/11/79	Federal Pacific Electric	D	D	273,553		Transformers
12807	7/13/79	Westinghouse	D	D	428,024		Transformers
15605	9/6/79	General Electric	D	D	212,100		Transformers
14688	9/26/79	General Electric	D	D	2,660,415		Transformers
		TOTAL			14,097,088	6,400,343	

Bonneville Power Administration

FY 80

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
17485	2/25/80	General Electric	D	D	459,000		Capacitor
20528	7/22/80	General Electric	D	D	299,700		Capacitor
19373	5/13/80	S&C Electric	D	D	172,039		Capacitor & Reactor
13593	11/16/79	Reynolds Metal	D	D	491,954		Conductor
17393	3/28/80	ALCOA	D	D	22,891,907		Conductor
19085	4/17/80	ALCOA	D	D	51,300		Conductor
19533	4/21/80	Kilsby Tube Supply	D	D	110,160		Conductor
18269	6/4/80	ALCOA	D	D	113,524		Conductor
22008	8/18/80	ALCOA	D	D	151,321		Conductor
21864	8/21/80	Summers Electric	D	D	117,064		Conductor
19375	6/10/80	Palnut Div. TRW	D	D	97,856		Conductor Hardware
18758	6/24/80	NGK-Locke Inc.	F Japan	F		93,625	Conductor Hardware
22032	6/24/80	Vernon Anderson	D	D	26,063		Conductor Hardware
21113	7/11/80	Lindsey Mfg.	D	D	104,751		Conductor Hardware
20737	7/11/80	Vernon Anderson	D	D	302,280		Conductor Hardware
19434	7/18/80	Modulus Corp.	D	D	1,073,697		Conductor Hardware
21358	8/14/80	Midland Metals	D	D	30,013		Conductor Hardware
20210	9/22/80	ALCOA	D	D	26,521		Conductor Hardware
20775	9/30/80	NGK Locke	F Japan	F		26,842	Conductor Hardware
17200	12/19/79	S&C Electric	D	D	63,874		Fuse Units
16663	2/7/80	Mitsubishi	F Japan	F		649,550	Gas Insulated Substation
18513	3/20/80	NGK Locke, Inc.	D	D	443,292		Insulator
20007	3/21/80	Sediver	D	D	369,660		Insulator
18951	3/24/80	NGK Locke, Inc.	D	D	315,920		Insulator
20093	3/28/80	Lapp Insulator	D	D	603,000		Insulator
20867	7/18/80	NGK Locke	D	D	2,071,894		Insulator
22768	8/13/80	Utility Equip.	D	D	129,612		Insulator
23084	9/10/80	N. Young Steel Fab.	D	D	49,800		Insulator
18486	5/8/80	ASEA	F Sweden	F		1,346,700	Reactors
18016	4/29/80	Westinghouse	D	D	41,022		Relays
18957	7/25/80	General Electric	D	D	280,000		Relays
18528	4/17/80	Willamette Mfg.	D	D	117,490		Structural Units
19012	5/9/80	Westinghouse	D	D	126,180		Surge Arrestors
15901	10/17/79	Willamette Mfg.	D	D	128,664		Tower Steel
17261	10/17/79	Maas Custom Design	D	D	31,830		Tower Steel
16100	11/14/79	Northern Steel	D	D	27,525		Tower Steel
15646	12/10/79	ITT Meyer Indust.	D	D	329,107		Tower Steel
20067	3/28/80	Sumitomo Corp.	F Japan	F		1,793,180	Tower Steel
17226	3/28/80	Nichimen	F Japan	F		1,972,835	Tower Steel
20454	4/11/80	Great Western Steel	D	D	171,441		Tower Steel
17968	4/11/80	Nichimen Co.	F Japan	F		1,269,549	Tower Steel
21977	6/19/80	Willamette Mfg.	D	D	249,144		Tower Steel
18981	6/2/80	Great Western	D	D	75,953		Tower Steel
19741	6/26/80	Willamette Mfg.	D	D	46,754		Tower Steel
20369	6/30/80	Sumitomo Corp.	F Japan	F		4,473,592	Tower Steel
19073	6/4/80	Willamette Mfg.	D	D	231,046		Tower Steel
19074	7/3/80	Greenberry Tank	D	D	330,933		Tower Steel
22148	7/7/80	Great Western Steel	D	D	1,186,822		Tower Steel

Bonneville Power Administration

FY 80 (continued)

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
22624	8/14/80	Great Western Steel	D	D	200,830		Tower Steel
14689	10/5/79	Square D	D	D	394,000		Transformers
17099	2/12/80	American Ligurian	F Italy	F		490,985	Transformers
15672	2/14/80	Cogenel	F France	F		89,151	Transformers
16350	2/20/80	General Electric	D	D	1,219,560		Transformers
17502	2/6/80	General Electric	D	D	152,000		Transformers
18203	3/17/80	Electromagnetic Ind.	D	D	104,000		Transformers
19832	3/17/80	Westinghouse	D	D	39,084		Transformers
21466	5/30/80	Smit Transformatoren	F Holland	F		846,200	Transformers
21845	6/11/80	Emile Haefely	F Germany	F		295,605	Transformers
20772	9/19/80	Westinghouse	D	D	473,708		Transformers
		TOTAL			36,523,295	13,347,814	

Bonneville Power Administration

FY 81

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
26412	8/31/81	General Electric	D	D	539,870		Capacitors
23738	8/26/81	Westinghouse	D	D	9,485,658		Capacitors
22750	12/19/80	Hitachi	F Japan	F		450,000	Circuit Breakers
25884	12/31/80	Westinghouse	D	D	1,300,000		Circuit Breakers
26700	5/1/81	Brown Boveri	F Switzerland	F		915,020	Circuit Breakers
21131	12/9/80	Kaiser Alum. & Chem.	D	D	7,775,735		Conductor
24321	1/3/81	Kaiser Alum. & Chem.	D	D	31,503		Conductor
26098	2/17/81	Copperweld	D	D	33,431		Conductor
26678	4/3/81	Kaiser Alum. & Chem.	D	D	26,959		Conductor
27360	6/10/81	Kaiser Alum. & Chem.	D	D	199,537		Conductor
27605	8/21/81	ALCOA	D	D	2,664,463		Conductor
25094	1/15/81	Travis Pattern & Fdry	D	D	30,250		Conductor Hardware
24462	1/21/81	Columbia Forge	D	D	29,156		Conductor Hardware
24339	1/23/81	A. Salvi	F Italy	F		44,438	Conductor Hardware
23820	1/23/81	Continental Electric	D	D	35,100		Conductor Hardware
25843	2/24/81	Bethlehem Steel	D	D	129,574		Conductor Hardware
25163	2/27/81	Fargo Mfg.	D	D	33,595		Conductor Hardware
26946	4/29/81	ALCOA	D	D	56,287		Conductor Hardware
27065	4/29/81	Fargo Mfg.	D	D	29,097		Conductor Hardware
27568	6/17/81	Dimensional Fabric.	D	D	36,839		Conductor Hardware
27933	6/26/81	Modulus Corp.	D	D	2,268,314		Conductor Hardware
28281	6/29/81	Palnut Div., TRW	D	D	118,267		Conductor Hardware
27893	7/10/81	Mitsui	F Japan	F		253,956	Conductor Hardware
27571	7/21/81	Fargo Mfg.	D	D	194,929		Conductor Hardware
28283	7/24/81	Springfield Fasteners	D	D	82,194		Conductor Hardware
27492	8/4/81	Square D	D	D	53,610		Conductor Hardware
30950	8/4/81	NGK Locke	F Japan	F		168,132	Conductor Hardware
30949	8/7/81	Lindsey Mfg.	D	D	113,220		Conductor Hardware
27567	8/7/81	Anderson Forge	D	D	325,335		Conductor Hardware
27569	8/26/81	Bethea National	D	D	469,663		Conductor Hardware
29211	9/9/81	Power Line Hdwe.	D	D	25,200		Conductor Hardware
29795	9/24/81	Tension Stringing	D	D	193,000		Conductor Hardware
22094	12/2/80	S & C Electric	D	D	40,678		Fuse Units
26465	7/2/81	S & C Electric	D	D	44,347		Fuse Units
30446	8/4/81	General Electric	D	D	47,136		Fuse Units
23020	10/27/80	Ohio Brass	D	D	34,218		Insulator
25164	4/1/81	NGK Locke	D	D	160,482		Insulator
26254	4/1/81	Lapp Insulator	D	D	28,717		Insulator
26082	5/7/81	NGK Locke	D	D	541,190		Insulator
31854	9/29/81	Sediver	F France	F		88,100	Insulator
29083	5/29/81	NGK Locke	D	D	268,256		Insulator
28045	8/21/81	Trench	F Canada	F		104,868	Reactor
23395	12/23/80	ASEA	F Sweden	F		5,263,155	Reactors
30799	9/10/81	ASEA	F Sweden	F		339,800	Reactors
29034	8/20/81	General Electric	D	D	25,523		Relays
30454	6/14/81	General Electric	D	D	442,233		Surge Arresters
31861	9/16/81	General Electric	D	D	31,008		Surge Arresters

Bonneville Power Administration

FY 81 (continued)

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
23387	10/6/80	Pacific Metal	D	D	38,015		Tower Steel
22758	10/20/80	ITT Meyer Ind.	D	D	1,428,564		Tower Steel
20434	11/7/80	T & D Structures	D	D	310,134		Tower Steel
23712	12/2/80	Willamette Mfg.	D	D	36,617		Tower Steel
24026	1/9/81	Great Western Steel	D	D	197,146		Tower Steel
25996	1/28/81	Great Western Steel	D	D	121,808		Tower Steel
26679	2/4/81	Great Western Steel	D	D	37,837		Tower Steel
25642	4/23/81	Advance Inductries	D	D	951,895		Tower Steel
26243	4/27/81	R.W. Taylor Stee.	D	D	3,725,324		Tower Steel
25679	4/27/81	Anchor Metals	D	D	4,596,714		Tower Steel
27578	4/6/81	Oregon Steel Mills	D	D	37,045		Tower Steel
28313	4/29/81	Nichimen	F Japan	F		7,929,972	Tower Steel
27431	6/18/81	Great Western Steel	D	D	349,809		Tower Steel
27189	6/17/81	Advance Industries	D	D	423,160		Tower Steel
27126	6/24/81	Sumitomo	F Japan	F		661,980	Tower Steel
29228	6/26/81	Great Western Steel	D	D	36,925		Tower Steel
29738	7/2/81	Willamette Mfg.	D	D	105,331		Tower Steel
30482	7/9/81	Levinson Steel	D	D	58,599		Tower Steel
30366	7/9/81	Asco Steel	D	D	331,985		Tower Steel
28559	7/27/81	Northern Steel & Spy	D	D	28,914		Tower Steel
28224	8/14/81	American Boiler Works	D	D	129,573		Tower Steel
29201	9/9/81	Blodgett Steel Fab.	D	D	472,741		Tower Steel
31617	9/9/81	Dis-Tran Products	D	D	53,050		Tower Steel
31982	9/24/81	Willamette Mfg.	D	D	66,526		Tower Steel
30663	9/29/81	Sumitomo	F Japan	F		984,688	Tower Steel
22946	11/17/80	Ritz Messwandler	F Germany	F		352,500	Transformers
23646	12/31/80	Westinghouse	D	D	1,642,981		Transformers
27873	4/17/81	Electromagnetic	D	D	69,600		Transformers
27614	4/24/81	General Electric.E.	D	D	2,098,764		Transformers
23927	3/27/81	Smit-Holec	F Holland	F		2,078,550	Transformers
27579	5/6/81	General Electric	D	D	49,236		Transformers
27214	5/28/81	Westinghouse	D	D	1,705,500		Transformers
27413	6/29/81	Hevi-Duty Electric	D	D	48,600		Transformers
28159	7/31/81	Emile-Haefely	F Germany	F		193,273	Transformers
30931	7/31/81	General Electric	D	D	49,080		Transformers
30933	7/31/81	Balteau Standard	D Belgium	D	96,198		Transformers
28224	8/14/81	Trench Electric	F Canada	F		139,425	Transformers
25098	9/24/81	Mitsubishi	F Japan	F		119,800	Transformers
[illegible]031	9/30/81	Balteau Standard	D	D	87,900		Transformers
10700	9/30/81	Federal Pacific Elec.	D	D	459,832		Transformers
		TOTAL			47,818,985	20,087,657	

FY 82

Bonneville Power Administration

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
32820	1/20/82	General Electric	D	D	10,014,755		Capacitors
28794	10/19/81	Cogenel	F France	F		208,210	Circuit Breakers
30466	10/19/81	Cogenel	F France	F		102,900	Circuit Breakers
30355	10/27/81	Alcoa	D	D	827,377		Conductor Hardware
32644	11/5/81	Columbia	D	D	40,000		Conductor Hardware
31225	11/19/81	Fargo Mfg.	D	D	28,492		Conductor Hardware
31224	11/30/81	Columbia Forge	D	D	35,786		Conductor Hardware
33118	1/29/82	Rome Cable	D	D	197,300		Conductor Hardware
33609	2/11/82	Reynolds Metal	D	D	255,495		Conductor Hardware
34456	4/22/82	Cressona Aluminum	D	D	174,074		Conductor Hardware
34994	5/12/82	Lindsey Mfg. Co.	D	D	34,776		Conductor Hardware
35754	5/13/82	Reynolds Aluminum	D	D	86,286		Conductor Hardware
35407	5/13/82	Reynolds Aluminum	D	D	27,135		Conductor Hardware
35938	7/14/82	Columbia Forge	D	D	39,150		Conductor Hardware
36757	9/23/82	Cressona	D	D	192,700		Conductor Hardware
29115	11/13/81	S&C Electric	D	D	39,368		Fuse Units
33342	1/13/82	S&C Electric	D	D	39,105		Fuse Units
33495	2/25/82	S&C Electric	D	D	57,327		Fuse Units
36155	5/10/82	S&C Electric	D	D	29,556		Fuse Units
36602	7/28/82	S&C Electric	D	D	29,836		Fuse Units
28148	12/01/81	ASEA	F Sweden	F		30,000,000	HVDC Upgrade
31488	12/4/81	Lapp Ins.	D	D	657,000		Insulator
31840	12/10/81	NGK-Locke	D	D	371,903		Insulator
32406	12/10/81	Sediver, Inc.	D	D	214,000		Insulator
32408	12/15/81	NGK-Locke	D	D	75,962		Insulator
33668	12/18/81	Ohio Brass	D	D	720,620		Insulator
36557	5/28/82	Lapp Insulators	D	D	237,330		Insulator
36440	7/20/82	Willamette Mfg.	D	D	169,929		Insulator
37080	9/16/82	Willamette Mfg.	D	D	195,856		Insulator
28444	10/29/81	ASEA	D	D	3,414,293		Relays
34490	4/5/82	General Electric	D	D	68,858		Relays
34942	5/19/82	General Electric	D	D	250,000		Relays
33310	2/3/82	Electra Switch	D	D	44,071		Relays
32510	10/16/81	Schmitt Steel	D	D	70,213		Tower Steel
29901	10/16/81	Trench Co.	F Canada	F		46,502	Tower Steel
30888	11/9/81	Keizer	D	D	36,598		Tower Steel
31625	11/12/81	Great Western	D	D	27,950		Tower Steel
33313	1/15/82	Greenberry Tank	D	D	164,199		Tower Steel
33683	1/8/82	CF&I Steel	D	D	109,481		Tower Steel
33679	1/21/82	Great Western Steel	D	D	240,526		Tower Steel
33378	2/16/82	ITT Meyers	D	D	65,360		Tower Steel
34947	4/6/82	AZCO Steel	D	D	31,746		Tower Steel
34516	4/13/82	Blodgett Steel	D	D	43,808		Tower Steel
34476	5/6/82	Greenberry Tank	D	D	131,428		Tower Steel
33937	5/4/82	Bethlehem Steel	D	D	57,993		Tower Steel
34974	5/19/82	Willamette Mfg.	D	D	302,198		Tower Steel
35391	5/28/82	Valmonte/ALS	D	D	66,900		Tower Steel
33621	6/10/82	Societa Gnonina	F Italy	F		59,040	Tower Steel

Bonneville Power Administration

FY 82 (continued)

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
36995	7/21/82	Modulus Corp.	D	D	27,722		Tower Steel
35978	7/8/82	LaGrand Steel	D	D	112,556		Tower Steel
37476	7/14/82	Great Western	D	D	85,669		Tower Steel
37765	7/30/82	Koff Electric	D	D	54,583		Tower Steel
37201	9/1/82	American Steel	D	D	38,426		Tower Steel
36759	9/3/82	Bethlehem Steel	D	D	310,389		Tower Steel
37177	9/16/82	Lehigh Structural	D	D	39,957		Tower Steel
31349	12/31/81	Trench	F Canada	F		571,675	Transformers
32197	2/25/82	Siemens-Allis	D	D	1,922,284		Transformers
31924	3/8/82	Nissho Iwai	F Japan	F		785,000	Transformers
32823	11/20/81	General Electric	D	D	1,839,566		Transformers
31623	11/27/81	Balteau Elec.	F Belgium	F		210,304	Transformers
31517	2/10/82	RTE ASEA	D	F		2,142,331	Transformers
34201	1/10/82	Federal Pacific	D	D	283,000		Transformers
34202	2/10/82	Westinghouse	D	D	151,886		Transformers
32522	2/18/82	American Elin	F Austria	F		223,800	Transformers
36421	5/21/82	Associated Engr.	D	D	37,404		Transformers
34727	5/21/82	Emile Haefely	F Germany	F		121,895	Transformers
34044	6/29/82	Westinghouse	D	D	77,394		Transformers
		TOTAL			24,897,576	34,471,657	

Bonneville Power Administration

FY 83

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
39630	11/18/82	Tennessee Valley Authority	D	F France		2,060,000	Circuit Breakers
39955	1/26/83	Reynolds Metals	D	D	367,556		Conductor
12111	8/4/83	Anderson Forge	D	D	43,840		Conductor Hardware
39942	1/26/83	Sowa & Sons	D	D	43,365		Conductor Hardware
11185	4/1/83	S & C Electric	D	D	72,114		Fuse Units
11374	7/29/83	NGK Locke	D	D	651,068		Insulators
39952	12/21/82	NGK Locke	D	D	178,560		Insulators
39795	12/21/82	Lapp Insulators	D	D	68,400		Insulators
39633	6/1/84	ASEA, Inc.	F Sweden	F		181,798	Reactors
11669	8/5/83	Wes End Welding Fab.	D	D	62,090		Tower Steel
39749	1/28/83	Seattle Western Industries	D	D	29,872		Tower Steel
37909	10/28/82	Oregon Machine Erectors	D	D	32,000		Tower Steel
11381	9/30/83	Bethlehem Steel	D	D	117,269		Tower Steel
11121	9/29/83	Anchor Metals	D & F	D & F	9,329,207	3,925,430	Tower Steel
39735	11/30/82	Anchor Metals	D	D	246,988		Tower Steel
12805	9/29/83	Great Western Steel	D	D	500,584		Tower Steel
11120	5/27/83	Nissho-Iwai	F Japan	F		737,759	Tower Steel
11381	9/30/83	Bethlehem Steel	D	D	176,930		Tower Steel
39545	11/4/82	Far West Steel	D	D	31,648		Tower Steel
39632	10/14/82	Great Western Steel	D	D	84,350		Tower Steel
39272	10/20/82	LeGrand Steel	D	D	25,785		Tower Steel
11373	6/23/83	Willamette Mfg.	D	F		87,595	Tower Steel
13046	9/29/83	Willamette Mfg.	D	D	795,752		Tower Steel
11785	7/7/83	Westinghouse	D	D	654,075		Transformers
36424	11/18/82	Westinghouse	D	D	1,348,199		Transformers
12881	7/8/83	Square D	D	D	36,740		Transformers
39981	2/3/83	Cogenel	F France	F		317,625	Transformers
39204	1/14/83	Hevi Duty Electric	D	D	322,393		Transformers
39649	3/11/83	General Electric	D	D	335,212		Transformers
39810	4/4/83	McGraw-Edison	D	D	651,100		Transformers
39818	5/19/83	H.K. Porter	D	D	455,208		Transformers
11900	4/5/83	General Electric	D	D	3,052,386		Transformers
		TOTAL			19,712,691	7,310,207	

Bonneville Power Administration

FY 84

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
13675	12/23/83	General Electric	D	D	115,186		Capacitors
11298	1/17/84	Westinghouse	D	D	15,228,305		Capacitors
12723	10/13/83	ALCOA	D	D	95,007		Conductor
14063	2/16/84	Kaiser Alum. & Chem.	D	D	117,392		Conductor
12714	11/25/83	ALCOA	D	D	20,269,547		Conductor
12741	11/25/83	ALCOA	D	D	5,221,006		Conductor
12716	10/17/83	Davis Walker	D	D	398,652		Conductor
14848	11/10/83	Reynolds Metals	D	D	9,846,578		Conductor
16598	6/11/84	Rome Cable Corp.	D	D	107,000		Conductor
13852	12/20/83	Fargo Mfg.	D	D	107,581		Conductor
13045	10/31/83	ALCOA	D	D	32,883		Conductor Hardware
12728	10/14/83	Anderson Forge	D	D	254,320		Conductor Hardware
14549	10/14/83	Lindsey Mfg.	D	D	40,132		Conductor Hardware
14550	10/14/83	Schmitt Forge	D	D	165,698		Conductor Hardware
12757	12/23/83	High Voltage Breakers	F Japan	F		6,624,957	Gas Insulated Substation
12715	11/23/83	NGK Locke	D	D	3,767,408		Insulator
14990	11/25/83	Italisolatori	F Italy	F		1,109,014	Insulator
13043	11/22/83	Sediver	D	D	311,321		Insulator
14438	2/24/84	Lapp Insulator	D	D	206,205		Insulator
16784	9/20/84	NGK Locke	D	D	108,327		Insulator
24518	8/22/84	Reliable Electric	D	D	92,000		Insulator
13043	12/6/83	Sediver	D	D	451,059		Insulator
11957	10/25/83	ASEA, Inc.	F Sweden	F		3,079,030	Reactors
14720	6/8/84	Siemens-Allis	D	D	481,210		Reactors
33106	3/31/82	Westinghouse	D	D	152,779		Reactors
15297	12/20/83	General Electric	D	D	372,774		Relays
14067	1/18/84	Anchor Metals	D	D	152,683		Tower Steel
15313	5/23/84	Willamette Mfg.	D	D	39,205		Tower Steel
14461	1/24/84	CE American Pole	D	D	771,332		Tower Steel
14871	12/7/83	Sumitomo Corp.	F Japan	F		31,541	Tower Steel
14353	2/1/84	Union Metal	D	D	130,094		Tower Steel
15579	2/10/84	Valmont	D	D	127,229		Tower Steel
16010	2/10/84	ITT Meyers Ind.	D	D	25,286		Tower Steel
14461	1/19/84	Anchor Metals	D	D	104,529		Tower Steel
14052	1/16/84	Willamette Mfg.	D	D	44,889		Tower Steel
15250	7/2/84	General Electric	D	D	208,029		Transformers
16187	7/2/84	General Electric	D	D	1,976,264		Transformers
17483	8/16/84	Balteau Standard	D	D	39,822		Transformers
18926	8/16/84	Emile-Haefely	F Germany	F		113,280	Transformers
		TOTAL			61,561,732	10,957,822	

Bonneville Power Administration

FY 85

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
21180	1/15/85	Westinghouse	D	D	314,100		Capacitors
22766	8/9/85	Westinghouse	D	D	2,306,694		Capacitors
22130	5/15/85	Westinghouse	D	D	730,500		Capacitors
23187	8/27/85	Brown Boveri	F Switzerland	D	275,000		Circuit Breakers
21896	5/20/85	TRW Palnut	D	D	42,725		Condcutor Hardware
20823	3/18/85	JARL Extrusions	D	D	43,110		Conductor
19310	10/26/84	ALCOA	D	D	70,830		Conductor
21983	6/13/85	Kaiser Aluminum	D	D	3,072,254		Conductor
22123	5/10/85	ALCOA	D	D	406,193		Conductor
21995	4/18/85	Davis Walker	D	D	73,980		Conductor
23385	9/12/85	Reynolds Metals	D	D	50,598		Conductor
21991	4/10/85	ALCOA	D	D	33,795		Conductor
23873	8/21/85	ALCOA	D	D	40,712		Conductor
22425	6/21/85	West Wire	D	D	96,750		Conductor
23969	5/15/85	Lindsey Mfg.	D	D	55,707		Conductor Hardware
23967	5/15/85	Schmitt Forge	D	D	48,911		Conductor Hardware
22111	8/1/85	Brown Boveri Corp.	F Switzerland	F		1,667,607	Gas Insulated Substation
16784	9/20/84	NGK Locke	D	D	123,177		Insulator
21989	5/19/85	NGK Locke	D	D	163,200		Insulator
23351	12/15/85	Lapp Insulator	D	D	58,266		Insulator
19027	10/16/84	Lapp Insulator	D	D	106,980		Insulator
24374	9/19/85	Sediver	D	D	39,560		Insulator
23847	9/20/85	Sediver	D	D	61,140		Insulator
24518	8/16/85	Reliable Electric	D	D	92,000		Insulator
20037	12/7/84	Potter & Brumfield	D	D	130,199		Relays
21895	8/12/85	Modulus Corp.	D	D	93,986		Tower Steel
18790	1/16/85	Anchor metals	D	D	3,691,014		Tower Steel
20759	4/14/85	ITT Meyers Ind.	D	D	81,450		Tower Steel
20394	1/7/85	ITT Meyers Ind.	D	D	33,162		Tower Steel
20759	5/1/85	ITT Meyers Ind.	D	D	81,450		Tower Steel
21068	2/22/85	Willamette Mfg.	D	D	320,875		Tower Steel
23455	9/26/85	Willamette Mfg.	D	D	41,881		Tower Steel
24040	5/17/85	Square D	D	D	37,500		Transformers
19589	12/13/84	ASEA, Inc.	F Sweden	F		404,745	Transformers
23272	7/26/85	Trench	F Canada	F		287,235	Transformers
		TOTAL			12,817,699	2,359,587	

Bonneville Power Administration

FY 86

Contract No.	Award Date	Awardee	Vendor Nationality	For/Dom. Mfg. Pt.	Domestic($) End Product	Foreign($) End Product	Commodity Description
60454	2/6/86	JARL Extrusions	D	D	41,520		Conductor
60272	1/10/86	Cressona	D	D	28,538		Conductor
61644	1/14/86	Schmitt Forge	D	D	57,168		Conductor
19861	10/11/85	Brown Boveri Corp.	F Switzerland	D	52,574,400		HVDC Expansion
60467	1/23/86	Lapp Insulator	D	D	88,000		Insulator
60293	1/9/86	NGK Locke	D	D	534,760		Insulator
60683	2/15/86	Union Metal	D	D	26,250		Tower Steel
62039	2/11/86	AG Industries, Inc.	D	D	74,745		Tower Steel
61683	•3/20/86	AG Industries	D	D	125,910		Tower Steel
60198	10/11/85	Balteau Standard	D	D	62,000		Transformers
61216	1/3/86	Westinghouse	D	D	2,841,300		Transformers
		TOTAL			56,454,591		

Mr. Conte. How much EHV equipment does BPA expect to procure during Fiscal Year 1986, and during Fiscal Years 1987-1989?

Mr. Johnson. This information is contained in a table I will submit for the record.

(The information follows:)

Remaining Fiscal Year 1986 Planned Procurements

		QTY	ESTIMATE ($)
* Shunt Capacitors	(115 KV)	1	65,000
	(230 KV)	2	1,750,000
* Power Circuit Breakers	(500 KV)	3	1,100,000
* Reactors	(230 KV)	1	510,000
	(550 KV)	1	460,000
* Transformers	(525 KV)	1	1,600,000
* Conductor			125,000
* Tower Steel			26,000
* Relays			2,300,000

Fiscal Year 1987 Planned Procurements

* Shunt Capacitors	(500 KV-600 MVAR)	1	2,500,000
* Series Capacitors	(500 MV)	2	3,732,750
* Transformer	(200 KVA)	1	200,000
* Power Circuit Breakers		9	3,206,000
* Disconnects	(500 KV)	20	640,000
* Insulator			930,000
* Conductor			2,110,000
* Tower Steel			358,000
* Reactor	(550 KV) (Thyrister Controlled)	1	2,000,000
* Relays			900,000

Fiscal Year 1988 Planned Procurements

* Disconnects	(500 KV)	20	640,000
* Series Capacitors		4	9,600,000
* Power Circuit Breakers	(500 KV)	13	4,550,000
* Transformers	(300+100 MVA)	2	1,500,000
* Tower Steel			492,000
* Conductor			181,000
* Conductor Hardware			80,000
* Relays			600,000

Fiscal Year 1989 Planned Procurements

* Gas Insulated Substation		1	2,000,000
* Shunt Capacitors	(500 KV-200 MVAR)	2	1,840,000
* Power Circuit Breakers	(500 KV)	3	1,050,000
* Disconnects	(500 KV)	3	90,000
* Relays			600,000

Mr. Conte. Mr. Johnson, I know that you share my concern over the competitive viability of the U.S. electrical manufacturing industry. I especially appreciate your efforts to provide an environment in which U.S. manufacturers can test and develop innovative technologies on the Bonneville system. Would you agree with me that it is important, for a variety of reasons including national security and the maintenance of our industrial base, to have a domestic electrical manufacturing industry?

Mr. Johnson. As you know, domestic firms are not competitive in certain segments of the EHV power equipment market. BPA agrees that it would be advantageous to add domestic firms to the competitive base in those segments of the EHV market. We can see long-term benefits to be gained for BPA's ratepayers if domestic EHV firms were to commit funds to improve their technologies and their competitive position in the international market. BPA would welcome such a commitment by domestic firms, and we continue to stand ready to work with them in this important effort.

EHV PROCUREMENTS

Mr. Conte. Mr. Clagett, would you, and in fact, would all of the PMA administrators provide for the record a listing of procurements undertaken or expected to be undertaken in Fiscal Year 1986 for EHV equipment as defined in last year's Energy and Water Conference Report, along with estimates of such procurements for 1987-1989?

Mr. Clagett. The expected extra high voltage procurements in FY 1986 and also for fiscal years 1987 through 1989 are shown in a list which I would like to insert in the record. Alaska, Southeast, and Southwest Power

Administrations have not purchased any extra high voltage equipment thus far in FY 1986 and have no planned procurements for any extra high voltage equipment through 1989.

(The information follows:)

PROJECTED EHV EQUIPMENT PURCHASES

(in thousands of dollars)

Type of Equipment	FY 1986	FY 1987	FY 1988	FY 1989
Transformers	10,000	0	18,200*	0
Series Capacitor Banks	0	2,500	16,500*	0
Power Circuit Breakers	0	1,000	4,800*	750
Relays	0	40	80	650*
Tapered Tubular Steel Structures or Structural Units	6,400	7,400	5,500	4,800
Total	16,400	10,940	45,080	6,200

*The majority of these amounts are associated with planned purchases for the California-Oregon transmission project and would be upfront funded by participants.

Mr. Johnson. I will provide a list for BPA for the record.

(The information follows:)

REPAYMENT REFORM

Mr. Conte. Ms. Fitzpatrick, the Administration is this year proposing a more modest repayment reform proposal than was proposed last year for the PMA's. For the record, would you provide a listing of the current versus proposed repayments for each of the PMA's for 1987 and the next four years?

Miss Fitzpatrick. I would like to insert for the record a table which provides current versus proposed repayments for the PMAs for FY 1987 through FY 1991 for each power marketing administration.

(The information follows:)

PMA REPAYMENT (Existing vs. Proposed) 1/ 2/
(In millions of dollars)

	1987		1988		1989		1990		1991	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Pro posed	Existing	Pro posed
Alaska Power Administration	5	6	5	6	6	8	7	9	7	9
Bonneville Power Administration	560	699	602	717	668	781	719	834	716	827
Southeastern Power Administration	61	74	61	74	61	75	61	79	81	101
Southwestern Power Administration	41	50	40	51	38	52	38	52	38	52
Western Area Power Administration 3/	286	266	252	266	233	251	192	222	198	224
Power Marketing Administration Totals	953	1095	960	1114	1006	1166	1017	1196	1040	1213

1/ Repayment includes both annual interest and amortization of principal payments to the U.S. Treasury.

2/ Amounts may vary slightly from other supplied tables due to rounding.

3/ The FY 1987 budget had assumed no impact due to straight line amortization for Western. Above table for WAPA excludes interest differential for the CRSP and Pick-Sloan projects resulting from repayment reform.

Mr. Conte. Miss Fitzpatrick, would it be fair to characterize the difference between PMA repayments under current law and repayments under your reform proposal as an implicit subsidy to PMA ratepayers?

Miss Fitzpatrick. The PMA's are required by current law and administrative orders of the Department of Energy to raise revenue to recover all the costs of the Federal power systems including operation and maintenance, interest and amortization, and certain irrigation costs assigned to be repaid from power revenues. Thus, all costs of building and operating the power systems are to be repaid in full. Interest is paid on all outstanding principal. Under the current practice, if the PMAs fail to make scheduled principal repayments then Treasury must refinance the shortfall at current interest rates, while the PMAs would continue to pay interest to the Treasury based on the original project interest rates.

The major difference between the present and proposed repayment method is the timing and predictability of principal payments. Currently, rates must be designed to amortize Federal investments over their average service lives or 50 years, whichever is less with no required annual payment. The proposed change in payment would require rates to be designed to amortize the Federal appropriated investment on a fixed, straight line schedule, resulting in more timely amortization of these investments. Interest rates would be unchanged when the PMAs fail to make scheduled repayments. In that case, the repayment of principal, if necessary, can be deferred, subject to the same terms and conditions applicable to deferred interest payments. Current interest rates are used because the deferral helps finance current operations.

REGIONAL UTILITY RATES

Mr. Conte. Ms. Fitzpatrick, would you provide a comparison of the typical rates within the various PMA service areas for different customer classes with the rates in New England, particularly my part of western Massachusetts?

Miss Fitzpatrick. I would like to insert for the record information from a January 1, 1985 DOE publication on typical electric bills which provided data on residential rates around the nation. The PMA's market wholesale electricity primarily for resale in Alaska, the Rocky Mountain Region, the Pacific Region, and parts of the Southeast, Southwest, and Central Plains Regions. However, the PMAs sell only a small portion of the power sold outside the Pacific Northwest.

Electricity rates are based on costs and the components of these costs vary widely among utilities. Fuel costs are the primary costs of utilities that are not hydro-based. PMAs are primary hydro-based with little or no fuel costs. Utilities which use fossil fuels pay fuel costs which comprise 75 to 95 percent of production costs for steam generation. In 1983, in Massachusetts, the primary fuels used by electric utilities were petroleum, almost 50 percent, followed by coal, 28 percent, and nuclear, almost 20 percent. Contrast this with the PMAs which are almost all hydroelectric.

Taxes are another big difference between utilities. The PMAs do not pay property taxes. Major eastern metropolitan areas have high taxes which must be collected through retail utility rates. For example, Consolidated Edison in New York pays 35.9 mills per kilowatthour in taxes which is substantial when compared to PMA wholesale rates.

Ownership also affects retail rates. Private utilities are allowed to collect a profit from retail ratepayers in order to pay dividends. The PMAs sell wholesale power and collect no profits or margins in rates.

In addition, based on data from the Edison Electric Institute, the PMAs enjoy low interest rates on many of their projects, compared to investor-owned utilities. In 1984, investor-owned utilities paid a 10.0% average interest rate on all their outstanding long-term debt, and paid a 14.5% average return on common stock equity. The PMAs, as of the end of fiscal year 1985, were paying the following average interest rate on their unamortized appropriated investments: BPA - 3.2%; SEPA - 3.6%; SWPA - 2.8%; and WAPA - 3.4%. Also, as of the end of FY 1985, I am informed BPA was paying 12.3 percent on its outstanding long-term borrowing of $1.14 billion and 8.2 percent on its outstanding short-term borrowing of $200 million.

Following is a tabulation of residential rates by region:

(The tables follow:)

RESIDENTIAL SERVICE--AVERAGES

Weighted Average Bills for Residential Service by Census Divisions, 1985, 1984, and 1975
(Dollars)

Census Divisions	January 1, 1985					January 1, 1984					January 1, 1975 1/			
	Kilowatthours					Kilowatthours					Kilowatthours			
	250	500	750	1,000	2,500	250	500	750	1,000	2,500	250	500	750	1,000
New England	26.67	49.57	68.12	90.71	213.05	26.43	49.50	67.01	89.63	212.11	14.32	22.00	30.92	40.55
Northampton, MA	23.23	43.89	57.54	78.19	178.20									
Pittsfield, MA	29.07	52.20	71.03	90.38	206.44									
Middle Atlantic	31.63	57.32	75.23	100.09	236.58	30.28	54.74	71.52	95.20	224.83	15.65	25.20	34.31	46.19
East North Central	21.90	39.53	53.94	69.73	150.26	20.67	38.85	51.78	68.83	141.31	10.24	15.20	21.50	28.40
West North Central	18.91	35.01	48.22	62.59	128.96	18.47	34.15	46.99	60.96	125.69	9.74	14.99	20.99	26.76
South Atlantic	21.58	38.32	53.88	69.81	162.03	20.62	36.66	51.49	66.65	154.28	11.46	18.58	25.54	32.68
East South Central	17.44	30.74	42.72	54.59	124.21	17.31	30.47	42.29	54.01	122.74	8.93	14.24	18.95	23.66
West South Central	21.68	38.06	52.33	66.40	145.13	20.90	36.38	49.99	64.80	139.42	9.40	13.51	18.50	23.99
Mountain	20.41	36.78	52.58	67.84	153.94	19.24	34.39	48.37	62.26	141.55	9.36	14.23	19.41	25.06
Pacific	16.84	37.24	55.68	78.38	196.73	15.24	34.08	48.85	69.01	174 02	9.87	15.85	21.65	27.38
Noncontinguous	29.25	52.70	76.06	99.42	239.61	29.34	52.95	76.62	100.15	241.32	13.90	22.16	30.35	38.77
U.S. Average	**22.51**	**41.86**	**57.86**	**76.37**	**175.99**	**21.57**	**40.18**	**54.76**	**72.77**	**166.00**	**11.49**	**17.93**	**24.72**	**32.29**

1/ Data not collected in 1975, for 2,500 kWh.
Source: Energy Information Administration Form EIA-213, "Typical Net Monthly Bills."

TYPICAL RESIDENTIAL ELECTRIC BILLS
BY TYPE OF ELECTRICITY USAGE
JANUARY 1, 1985 (Dollars)

	Lighting and Appliance		Lighting, Appliance and Hot Water		All Electric Home
kilowatt hours	250	500	750	1000	2500
Selected Cities Served by PMAs					
Seattle, Wash. - Winter	4.68	9.92	21.77	33.62	104.72
Seattle, Wash. - Summer	3.28	10.17	17.97	25.77	72.57
Tacoma, Wash. - Winter	8.98	14.70	20.43	26.15	60.50
Tacoma, Wash. - Summer	7.35	11.45	15.55	19.65	44.25
Portland, Ore.	12.51	24.01	36.13	48.63	126.15
Eugene, Ore.	11.53	18.06	24.58	31.11	70.28
Idaho Falls, Idaho	11.20	19.40	27.60	35.80	85.00
Sacramento, Calif. - Winter	13.85	23.15	32.45	41.75	77.00
Sacramento, Calif. - Summer	15.43	26.30	37.18	48.05	114.00
Santa Clara, Calif.	10.78	20.27	29.75	39.24	96.17
Palo Alto, Calif.	6.25	17.50	31.35	46.10	134.60
Colorado Springs, Colo.	11.50	20.43	29.05	37.66	89.35
Selected New England Cities					
Boston, Mass. - Winter	29.93	53.87	77.80	101.74	245.34
Boston, Mass. - Summer	33.68	63.62	83.80	115.24	303.84
Northampton, Mass.	23.23	43.89	57.54	78.19	178.20
Pittsfield, Mass.	29.07	52.20	71.03	90.38	206.44
Other Selected Cities					
New York City - Winter	40.39	74.50	93.62	126.57	331.20
New York City - Summer	40.39	78.51	101.62	138.58	367.24
Chicago - Winter	26.45	43.72	56.12	68.53	142.96
Chicago, - Summer	35.42	64.93	70.40	96.21	273.25
U.S. Average	22.61	41.86	57.86	76.37	175.99

Source: Typical Electric Bills, January 1, 1985 published by the Energy Information Administration.

ELECTRIC RATES

Mr. Conte. What is the effect of having significantly lower electrical rates, for example, within the Bonneville service area, than we have in New England.

Miss Fitzpatrick. I would defer to Mr. Johnson for that answer.

Mr. Johnson. The variation between electricity rates does not appear to have made a major difference. For example, the 1983 per capita personal income in Massachusetts was $13,264 and in Washington was $12,177. These figures do not seem to imply any particular advantage between States.

Two effects are worth noting. One is higher concentration of electricity-intensive aluminum smelters in BPA's service territory. The second is the shift of household energy budget from gas and oil to electricity in the Pacific Northwest. These two effects mean that any increase in the price of electricity would cause a more dramatic increase in the average energy prices in the Pacific Northwest than in other regions because of the large proportion of total energy consumption represented by electricity consumption.

Mr. Conte. How does that affect the location of industry and manufacturing facilities, and overall economic development?

Mr. Johnson. Electricity costs are only one component of a complex set of factors that determine industrial location. Availability of raw materials, labor costs, transportation costs, availability of capital financing, and quality of life are other factors. In several of these areas, the Pacific Northwest is at a distinct disadvantage when compared to New England. Proximity to eastern markets is an obvious disadvantage which is not and, given the strength of the dollar, may not be balanced by the Pacific Northwest's potential access to Pacific Rim markets. Also the economy of the Pacific Northwest has been dominated by the lumber and wood products industry which is experiencing a major resource availability shift away from the region.

I believe that the future growth or contraction of manufacturing industry in either region is primarily dependent on international and national macroeconomic factors. Generally, electricity is not a major cost of production. With the exception of the electricity-intensive aluminum smelters, industry is not even particularly responsive or elastic to changes in electricity price. Therefore, differences in regional electricity rates will only have a minor role in new industrial economic development.

Mr. Conte. Ms. Fitzpatrick, would you provide a listing similar to that requested in Question 14, of rates if your repayment reform proposal were adopted. PMA rates would still be lower than rates in New England, wouldn't they?

Miss Fitzpatrick. The PMAs are wholesale suppliers of electricity which we typically sell to preference customers and utilities. With the exception of Bonneville industrial contracts, the PMAs do not normally sell directly to residences, industries, manufacturing facilities, or commercial establishments. At this time, the Department has not prepared any studies of the impacts of repayment reform on the average national residential rates. However, considering an overall increase of 1 to 4 mills in PMA wholesale rates across the nation, the average national residential rates national would most likely remain relatively unchanged.

I would like to insert for the record, a table showing the rates if repayment reform is legislatively enacted.

(The table follows:)

ANTICIPATED WHOLESALE POWER RATES
ASSUMING REPAYMENT REFORM EFFECTIVE OCTOBER 1, 1986

(mills per kilowatthour)

	FY 1986	FY 1987		FY 1988		FY 1989	
		Existing Repayment	Repayment Reform	Existing Repayment	Repayment Reform	Existing Repayment	Repayment Reform
Alaska Power Administration							
Snettisham	25	28	32	28	32	28	32
Eklutna	19	19	19	19	19	19	19
Bonneville Power Administration							
Priority Firm Power Rate (PF)	22.2	22.2	24.0 1/	23.3	24.7	24.1	25.5
Industrial Firm Power (IP) Standard Rate 2/	22.8	22.8	22.8	22.8	23.1	23.0	24.4
Surplus Firm Power Rate 3/	29.9	29.9	29.9	31.3	31.3	32.7	32.7
Non Firm Energy Standard Rate (NF) 3/	23.4	23.4	23.4	23.4	23.4	23.4	27.9
Southeastern Power Administration	16.4	17.5	19.2	18.2	20.0	20.0	21.8
Southwestern Power Administration	27.4	27.5	30.5	27.5	31.1	27.5	32.0
Western Area Power Administration: 4/	15.4	16.6	16.6	16.79	17.21	16.72	17.25

1/ Preliminary estimates FY 1987. Assumes that BPA could raise FY 1987 rates if legislation revising the repayment methodology were enacted and the straight-line proposal went into effect on October 1, 1986, and that the entire increase would fall on the PF Rate. It tentatively appears that other rates would not increase in FY 1987 because of a floor rate in effect for the Direct Service Industrial (DSI) customers that keeps the IP rate higher in the near-term than it would be otherwise, and because of market conditions for SP and NF sales. Under existing law, BPA's DSI customers could not be completely sheltered from some rate increases resulting from implementation of this proposal. Under some alternative scenarios, it is possible that an increase could be required if there is a revenue shortfall due to (1) continuing low aluminum prices and (2) the sudden rapid decrease in oil and gas prices, affecting BPA's export markets.

2/ The rate actually paid by aluminum companies will vary from this standard rate as the price of aluminum during the years varies.

3/ Assumes revenues from this customer class are not increased above currently projected levels.

4/ Weighted average of all Western Area Power Adminstration Projects. CRSP and Pick-Sloan interest differential due to repayment reform not included in FY 88 and FY 89 rate evaluation.

GRAMM-RUDMAN

Mr. Conte. Ms. Fitzpatrick, as you know, the PMA programs other than administrative expensives have been exempted from Gramm-Rudman. Many other programs funded either through revolving funds or dedicated trust funds have not been exempted, however. What would be the effect of removing the Gramm Rudman exemption from the Power Marketing Administration programs?

Miss Fitzpatrick. The effect of removing the exemption would depend on the specifics of the legislative change. Assuming only the overall exemption from sequestration for each of the PMAs was removed and the other exemptions continued to apply, there would be an increased portion of program expenditures subject to sequestration. We would have to obtain a legal opinion determining whether exemptions would still apply as a result of prior contractual obligations and the availability of offsetting collections. If significant sequestering occurred, the capital construction would be significantly reduced. If the overall PMA operations were also affected, the restrictions on expenditures would reduce efficiency of operations, disrupt power sales and construction contracts, impact public health and safety, increase financial liability, reduce reliability of the power system over time, and cause a less efficient businesslike operation. Reductions in expenditure levels would not only jeopardize the level of service provided, but would likely reduce the ability of BPA and WAPA to participate in the construction of interregional interties--which--would increase imported oil and natural gas and reduce our marketing flexibility and ability to repay our investments to the U.S. Treasury. Since PMA revenues are based on covering the cost of operations, capital improvements, and other repayment obligations, a reduction in expenditures would, over time, result in a corresponding reduction in revenues. The goal of Gramm-Rudman, to reduce the deficit, might be supported in the short term, but would not be achieved in the long run because PMA customers pay for capital and operating costs - not the general taxpayers.

STATUTORY LIMITATIONS OF BPA'S BORROWING AUTHORITY AND OBLIGATIONS

Mr. Conte. What would be the effect of using statutory limitations on Bonneville borrowing authority, or a statutory ceiling on Bonneville obligations?

Mr. Johnson. BPA already has statutory limitations on its borrowing authority. Under the Federal Columbia River Transmission System Act of 1974, Congress authorized BPA's self-financing and provided permanent indefinite borrowing authority in the amount of $1.25 billion to carry out BPA statutory responsibilities to its ratepayer customers, including those responsibilities added by the Northwest Power Act. Subsequent legislation has set statutory borrowing authority of $3.75 billion for BPA programs. The limitation was set to be sufficient for BPA to have utility planning certainty during approximately the next ten years.

Pursuant to law, BPA submits annual budgets with proposed borrowing authority and obligational amounts for Congressional review. All BPA obligations are subject to Congressional review under Section 11(b) of the Federal Columbia River Transmission Act. Thus, the Congress has reserved the right to review the annual BPA budget and limit obligations.

These limits have been designed to provide BPA the necessary operating and financing flexibility to meet its statutory obligations, while reserving for the Congress appropriate oversight and guidance.

Mr. Conte. Wouldn't such an approach be consistent with the Administration's approach to bring all Federal agencies on-budget with uniform fiscal controls?

Mr. Johnson. Bonneville's obligational and borrowing authorities are already on-budget by virtue of being included in the President's budget. BPA's complete utility program of capital funding, revenue funding, and reimbursable funding is presented to the Congress for review. Congress under the FCRTSA retains the opportunity to exercise annual control over BPA. Congress has chosen to balance its oversight with its concern that BPA have the fiscal and budgetary flexibility to carry out its self-financed electric power marketing utility responsibilities in a prudent, businesslike manner.

RECEPTION AND REPRESENTATION FUND

Mr. Conte. For the record, may I have an itemization of the use of Bonneville's Representation Funds during the past two and the current fiscal years?

Mr. Johnson. I would be happy to provide a breakdown of how the Reception and Representation Fund has been used.

(The information follows:)

RECEPTION AND REPRESENTATION FUND USE
(ACTUAL DOLLAR OBLIGATIONS)

	FY 1984	FY 1985	FY 1986 Through 2-28-86
Foreign Visitors	519	478	92
BPA Business Oriented Meetings	219	167	306
Professional Meetings	251	209	236
Ceremonies	698	163	379
Other	31	--	155
Total	1,718	1,017	1,168

The foreign visitor category includes lunches and dinners for Canadians, with whom we have a treaty, and representatives of other countries who visit our transmission system and research facilities. Refreshments of coffee, soft drinks, and pastries were purchased for the business and professional meetings with utilities and customers. A ground breaking and recognition events make up the ceremonies category, and other items include a press conference and gifts representing the Northwest to Swedish dignitaries during the Nobel ceremonies in FY 1986.

FISH AND WILDLIFE

Mr. Conte. Mr. Johnson, could you describe your proposed fisheries program for Fiscal Year 1987?

Mr. Johnson. BPA's fish and wildlife program focuses on the protection, mitigation and enhancement requirements contained in Section 4(h) of the Pacific Northwest Electric Power Planning and Conservation Act. The Northwest Power Planning Council established under the Act, adopted a Columbia River Fish and Wildlife Program in 1982. The Council's Program was amended in 1984 and is presently in its second amendment process. BPA implements activities that are consistent with the Program and that serve to retire BPA's obligation for mitigation of Federal Columbia River hydroelectric facilities. We implement the Columbia River Fish and Wildlife Program through contracts with state and Federal fish and wildlife agencies, Indian Tribes, universities, private firms, and others. BPA oversees these contracts and activities to ensure the prudent expenditure of the Northwest ratepayers' funds and to maximize benefits to the fish and wildlife resources.

Another aspect of BPA's program concerns providing equitable treatment for fish and wildlife resources in planning and operating the Federal Columbia River Power System. The Council's Program established a "Water Budget" to enhance the survival of young fish migrating down the Columbia River. Bonneville cooperates with the fish and wildlife agencies and Indian Tribes in providing this additional block of water to assist juvenile migration and has derated the firm energy production capability of the hydrosystem to meet this objective. This results in an average annual revenue loss to BPA of about $58 million. In addition, BPA continuously evaluates its programs and actions to ensure that the potential effect on fish and wildlife is understood and, where possible, minimized or removed. The FY 1987 proposed fish and wildlife budget of $44.2 million reflects increased capital construction projects and ongoing work initiated in prior years. Of the FY 1987 total, $18.5 million is capitalized and funded from borrowing, while $25.7 million is expensed and funded from ratepayer revenues.

NEW HYDRO DEVELOPMENT

Mr. Watkins. Is it true that the Power Marketing Administration, as opposed to any other entitites, must market the power produced at a federal dam if the power project is authorized by Congress, even if a non-federal entity puts up 100% of the cost of the project up-front?

Mr. Wilkerson. It is generally true that the PMA's must market the power produced by the Bureau of Reclamation or Army Corps of Engineers at federal dams; however, a non-federal entity can obtain a Federal Energy regulatory Commission License to fund, construct, operate and market power at a federal dam.

Mr. Watkins. If so, on what do you base this requirement?

Mr. Wilkerson. The requirement for the PMAs to market power produced at a federal generating project is contained in Section 5, Flood Control Act of December 22, 1944, (58 Stat. 887, 890; 16 U.S.C.A. 825s), and Public Law 95-91, Title III, 301, August 4, 1977-91 Stat. 577, Department of Energy Organization Act which requires the Secretary of Energy, through Southwestern Power Administration (SWPA), to market power and energy produced at projects under control of the Corps of Engineers. This requirement does not necessarily apply to non-Federal generating projects located at Federal dams.

Mr. Watkins. Unless these non-federal entities have large sums of surplus money available for investment, it appears to me that they must arrange for financing the project through various means; is this true?

Mr. Wilkerson. Yes, a non-federal entity would have to seek funding through the sale of bonds or other means if they did not have the required funds.

Mr. Watkins. I know there are not many such non-federal entities in Rural America, especially in the 3rd Congressional District of Oklahoma. I assume that the PMAs agree to reimburse the non-federal sponsor for the principle and interest from revenues generated over the life of the project, is this true?

Mr. Wilkerson. If the PMAs market the power, the non-federal sponsor would be reimbursed either through the taking of the power and energy from the project over a specified time or with revenues generated from the sale of power and energy. In the case of reimbursement from revenues there must be specific legislation allowing the disbursement of SWPA revenues for this purpose.

Mr. Watkins. If the PMAs are just passing this principle and interest through to repay their financing costs, and we have agreed that most of them are doing that, then what incentive are you providing for non-federal sponsors to become involved?

Mr. Wilkerson. The incentive to the non-federal sponsor is either the receipt of power and energy at actual cost such as for the Town Bluff project, or, in the case of the W.D. Mayo project proposed by the Cherokee Nation, SWPA would repay the Nation its actual principal and interest expense plus a royalty over a specified period of time.

Mr. Watkins. If there is no financial incentive, why should they agree to finance projects?

Mr. Wilkerson. There are financial incentives that are derived either by receipt of power and energy or by a monetary return.

Mr. Watkins. Is it true that under current administrative policy (not legislation) a project cannot be approved unless a non-federal sponsor provides up-front financing of 100% of the cost of the hydropower project?

Mr. Wilkerson. President Reagan, in a letter to Senator Laxalt in January 1984 established the policy which requires a reasonable amount of non-federal funding for water projects. Because of present budget constraints, the Corps of Engineers has established a goal of 100% of non-federal funding on new hydroelectric power projects.

Mr. Watkins. Therefore, without incentives to attract non-federal sponsors, is it not true that we can soon expect there to be no new federal power projects?

Mr. Wilkerson. There are incentives to attract non-federal sponsors and their are several projects currently under discussion. There projects include Kaw Dam on the Arkansas River in Oklahoma, Fort Gibson Dam Unit #5 and 6 on the Grand River in Oklahoma, Denison Dam Units #3 and 4 on the Red River on the Oklahoma and Texas border. Norfork Dam Units #3 and 4 on the Norfork River in Arkansas, Lock and Dam #4, 5 and David Terry on the Arkansas River in Arkansas, and Lock and Dams #3, 4 and 5 on the Red River in Louisiana.

Mr. Watkins. Does the Corps of Engineers or the Power Marketing Administration have the lead responsibility to obtain non-federal sponsors for federal power projects?

Mr. Wilkerson. The responsibility to select non-federal sponsors for Federal hydroelectric power projects is shared jointly by the Corps of Engineers and the Southwestern Power Administration. The Corps must be involved in sponsor selection because they must be assured of receiving construction funds in a timely manner to complete the project, pursuant to the Contributed Fudns Act. Southwestern must be involved because they market all power and energy from Federal generating projects (excess to project needs) under Section 5 Flood Control Act of December 22, 1944, (58 Stat. 887, 890; 16 U.S.D.A. 8255), and recover costs from revenues resulting from the sale of that power and energy.

Mr. Watkins. Upon what authority is this responsibility based?

Mr. Wilkerson. The responsibility is derived under the current legislative authority governing each agency.

Mr. Watkins. It is my understanding that a non-federal entity must provide certain assurance to the Corps of Engineers before the Corps can proceed with feasibility studies. Does this non-federal entity become the non-federal sponsor of the project automatically?

Mr. Wilkerson. The Corps of Engineers require an indication of interest (commonly known as a "letter of intent") from a non-federal interest prior to completing pre-authorization studies. The letter of intent is not binding on either party and is required only to indicate to the Congress non-federal interest in the project. The non-federal entity signing a letter of intent on a proposed hydroelectric power project does not automatically become the project sponsor.

Mr. Watkins. If not, are they given the first right of refusal as non-federal sponsor?

Mr. Wilkerson. No, they are not given the first right of refusal.

Mr. Watkins. If not, why not?

Mr. Wilkerson. Project sponsors are selected through public participation in accordance with the Administrative Procedures Act. Normally the non-federal entity who submits the proposal which would result in the lowest cost power to the ultimate consumer and is financially capable is selected as the project sponsor.

Mr. Watkins. Who does the non-federal sponsor sign an agreement with--the Corps or one of the Power Marketing Administration?

Mr. Wilkerson. The non-federal sponsor, the Corps of Engineers and the Southwestern Power Administration all sign a construction agreement.

Mr. Watkins. Who negotiates this agreement?

Mr. Wilkerson. The agreement is jointly negotiated by the Corps and Southwestern Administration.

Mr. Watkins. Who has the lead if it is a joint responsibility?

Mr. Wilkerson. Because of its relationship with the utility industry, Southwestern assume the primary responsibility to bring the contract package together, but in the areas where the corps is affected, they assume responsibility for their functional areas.

Mr. Watkins. Upon what authority or directive is this responsibility based?

Mr. Wilkerson. The Corps operates under the authority of the various Flood Control Acts which provides them with authority to construct hydroelectric projects. The PMAs authority to market power is contained in Section 5 of the Flood Control Act of 1944 and the Department of Energy Organization Act.

Mr. Watkins. Is any preference given to public non-federal entities over non-federal private entities in these negotiations?

Mr. Wilkerson. Preference is not given in sponsor selection, however, preference is given in the sale of power and energy from all Federal hydroelectric power projects constructed with or without non-federal funds.

Mr. Watkins. Mr. Wilkerson, there are several projects within the 3rd Congressional District of Oklahoma being studies for potential federal power projects, including: Hugo, Pine Creek, Texoma, Sardis, Lukfata and Tuskahoma Lakes. Who are you negotiating with as non-federal sponsors of each of these projects?

Mr. Wilkerson. We are not negotiating nor have sponsors been selected on any projects in southeastern Oklahoma. We have had informal discussions with a non-federal entity at their request on constructing additional hydroelectric power units at Denison Dam (Lake Texoma) and we have asked the Southwestern Power Resources Association (an association of preference customers) for an opinion on some preliminary economic alternatives at Pine Creek Lake.

Mr. Watkins. Since RedArk Development Authority has provided assurances to the Corps of Engineers on each of these projects, will they be given first right of refusal on these projects?

Mr. Wilkerson. The RedArk Development Authority would not have first right of refusal in the sponsor selection process, however, their proposal would be considered equally with any other proposal in the public participation area.

Mr. Watkins. Mr. Wilkerson, if Southwestern Power Administration were provided non-repayable funds to be utilized for contracting in areas with heavy development of hydropower in economically depressed areas, could you contract with an entity such as the RedArk Development Authority to study the hydropower capability in the area served by RedArk?

Mr. Wilkerson. Yes, I believe we could contract with an entity such as RedArk; however, the manner in which the Appropriation Language is set forth will dictate whether Southwestern could contract directly with RedArk or whether the normal competitive procurement procedures would be required.

POLICY ON USE OF GOVERNMENT POWER

Mr. Watkins. Please explain your policy on increased flexibility of the use of Government power.

Mr. Wilkerson. Some SWPA customers currently face cash flow problems arising from surplus generating capacity and burdensome transmission expenses. Our studies show that with a little flexibility from SWPA and their own innovations, our customers could diminish the effects of these two cash flow problems.

In the first instance, those with an overabundance of generating capacity can temporarily loan their allocation of Federal power to another preference entity who is short of capacity, thus benefiting the cash flow of both without affecting the Federal system.

Some SWPA customers currently realize little financial benefit from their Federal power allocation. This is because transmission wheeling expenses in our area are normally computed on capacity and customers must wheel through two or three separate systems in order to receive this power. SWPA's flexibility policy will allow those customers with sufficient capacity to schedule their power requirements at a reduced capacity rate, lower their transmission expenses, and receive all of the Federal energy and benefits that they purchased before.

Mr. Watkins. What does this flexibility cost the Government?

Mr. Wilkerson. This flexibility is produced at no cost to the Government. Additionally we believe it to be a substantial improvement in the utilization of the Government's resources.

Mr. Watkins. Are many customers taking advantage of this flexibility?

Mr. Wilkerson. We presently have twelve municipal customers in Louisiana who use scheduling flexibility and thereby reduce transmission service costs that is incurred (in wheeling Federal energy through utility transmission systems which are investor-owned.) The results are significantly lower overall costs for the delivered energy. Capacity borrowing is also being considered between Louisiana and Kansas utilities.

TRANSMISSION SYSTEM RELIABILITY

Mr. Watkins. Mr. Wilkerson, what is Southwestern Power Administration doing to insure reliability of the transmission system in your area?

Mr. Wilkerson. In addition to the normal continuous routine maintenance program of repairing and replacing defective equipment, controlling brush growth on transmission line right-of-ways and periodic testing of equipment, SWPA has taken or is taking the following actions:

A comprehensive substation testing program which included all bushings, insulators, and oil was just completed and resulted in the identification of two incipient problems.

All wood poles on the system have now been tested for rot.

All substations and transmission lines have undergone infrared inspections, which identified several hot spots indicating poor connections.

Replaced eleven power circuit breakers to provide more interrupting current capacity.

An evaluation of our power switching instructions has been conducted.

A revised training and certification program for power switchmen has been developed and when completed, will provide our employees with a stronger emphasis on how switching by neighboring utilities may affect our system.

A microwave system which consists of thirty-six stations is nearing completion. This will significantly improve our ability to respond to emergencies and control the power system

In order to further enhance the capability of the system operator, we are expanding the supervisory control and data acquisition system to 12 Corps of Engineers power generation projects.

By April 1986, we will have installed, a 120 MVA transformer in Weleetka, Oklahoma. This new transformer will replace old transformers which historically have high energy losses.

RATES AND FINANCIAL CONDITION

Mr. Watkins. What is the status of your rates and your current financial condition?

Mr. Wilkerson. Our current financial condition is the healthiest in SWPA's history. We have paid off $101.6 million of the total $839 million in current repayable investment and our current study shows that we will meet all of our repayment obligations. We have just experienced two very good rainfall years with FY 1985 being the second largest production year of record. Last year we had $120 million in sales and netted out $40 million for repayment which is substantially above the normal $20 million annual needs.

We have been able to accomplish this condition by keeping our rates current through increases in FY 1983 of approximately $25 million, or 38% and FY 1985 of about $1 million, or 1%. By keeping our rates current and costs down we are able to take full advantage of high rainfall year sales.

Statement of Donna R. Fitzpatrick
Assistant Secretary
Conservation and Renewable Energy
Department of Energy
Fy 1987 Appropriations Hearings

Mr. Chairman and Members of the Subcommittee, I am pleased to be here with the five power marketing administrators to present their budget requests for FY 1987.

First, let me introduce my colleagues: Robert Cross, Administrator of the Alaska Power Administration, Harry Geisinger, Administrator of the Southeastern Power Administration; Ronald H. Wilkerson, Administrator of the Southwestern Power Administration; William H. Clagett, Administrator of the Western Area Power Administration; and Peter Johnson, Administrator of Bonneville Power Administration. Each of the administrators will speak to the budget needs of his own agency.

The President's FY 1986 budget request included a specific proposal for the sale of Alaska Power. In May of 1985 APA and the Alaska State Office of Management and Budget entered into an agreement to evaluate issues involved in the proposal. The results of their study should be finalized in April of 1986. In FY 1987 the Department of Energy plans to expand on this effort and pursue defederalization of all five PMAs. Utilities are not normally a Federal responsibility and we believe non-Federal owners could operate the PMAs as efficiently, or more efficiently, than the Federal government.

The Administration will pursue defederalization through an open, competitive process which will include the development of legislative proposals. Working Groups are being established to look at all possible options. Before the transmittal of defederalization legislation, we will seek the views of concerned groups and individuals, including congressional delegations, State and local officials, current customers, the financial community, and public power and private sector energy interests. Funds are included in the budget for operating the power marketing administrations in 1987. It is expected that all the PMAs will have been transferred from Federal control by FY 1991.

The President's FY 1987 budget also proposes to legislatively modify the repayment practices of the five PMAs. Our proposal calls for the PMAs to repay the unpaid balance of principal for power investments, assuming a useful service life of up to 50 years, at a level not less than would be required under a straight-line amortization schedule. Repayments of principal under this proposal, if necessary, could be deferred, subject to the same terms and conditions applicable presently to deferred interest payments (e.g., current interest rates would be paid on the portion of amortization deferred because the deferral helps finance current operations). The proposed changes are intended to protect the interests of the Nation's taxpayers. The impact of this repayment proposal is modest compared to the proposal made in last year's budget.

Mr. Chairman, that completes my testimony. The power marketing administrators have statements on their budget requests and we will be glad to answer any questions you may have.

Statement of Robert J. Cross
Administrator
Alaska Power Administration
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman and Members of the Committee:

I would like to give your committee a brief progress report on the Alaska Power Administration (APA) and a summary of our budget request for FY 1987.

PROGRAM OVERVIEW

APA is responsible for operation, maintenance, transmission and power marketing for the two Federal hydroelectric projects in Alaska. These are the 30 MW Eklutna Project serving Anchorage and surrounding areas, and the 47.6 MW Snettisham Project, which is the main power source for Juneau, Alaska's Capitol City. The two projects now provide roughly 8% of the energy requirements for Alaska's electric power utilities, with the balance coming from utility-/and State-owned plants.

In earlier years, APA carried out planning work on future power supply and transmission programs. The planning work has been phased out because the State and local utilities now have sufficient resources to do the necessary studies without further Federal involvement.

We maintain our headquarters office in Juneau with field offices at each project for the operation and maintenance work. Our staffing request is 38 FTE's, the same as for FY 1986.

An expansion of the Snettisham Project is now underway by the Corps of Engineers which has design and construction responsibility for that project. The new construction is the Crater Lake Unit which will add 34.5MW at a cost of about $58 million. Power on line is estimated in late 1988.

CURRENT ACTIVITIES

I am pleased to report that both projects are in good condition. I believe our current maintenance levels are adequate to assure good protection of the investment and continuity of service.

We have underway a project to modernize and automate the 31-year old Eklutna powerplant. This will allow us to shift from a fully-attended plant to remote operation by supervisory control. We have estimated that the manpower savings will pay for the new equipment within about 3 years. The new system is scheduled for completion in 1986, and we expect to complete the shift to remote operation in FY 1987.

Other current activities include a program to replace PCB transformers, replacement of one of the turbine runners at Eklutna, and continuation of a fairly intensive transmission line maintenance program started three years ago for Snettisham Project.

For 1985, we marketed 309 million kilowatt hours with gross revenues of $6,866,000. We are estimating sales of 336 million kilowatt hours with revenues of $7,732,000 for FY 1986.

Our appropriation level has been fairly steady in recent years -- $3,233,000 in 1985 and $3,245,000 in 1986. The latter number reflects the adjustment under Gramm-Rudman-Hollings.

NET BILLING

We have used net-billing arrangements for wheeling of Snettisham power over non-Federal transmission lines and for an operations contract which provides utility operators for Snettisham. The actual amount net-billed in FY 1985 was $205,000, or 3% of revenues.

We plan to develop a similar operations contract for Eklutna after the automation project is complete. Operations would be handled remotely by one of our utility customers. We also propose to use net-billing for our costs under the contract. We are estimating net-billing amounts of $350,000 in 1987 (total of both projects), or 3.8% of projected 1987 revenues.

The President's FY 1986 Budget included a proposal that the Alaska Power Administration projects be sold to the State of Alaska or other non-Federal ownership.

This idea makes sense for many reasons. The two APA projects constitute a fairly small part of the power supply and transmission facilities in Alaska. Both are essentially single-purpose power developments with all costs allocated to power. The State has its own Alaska Power Authority with capability to plan, design, finance, and construct hydroelectric and other power facilities. The APA customers operate both generation and transmission facilities. APA serves in only one state. There is just no longer a need for a separate Federal power program in Alaska.

For the last several months we have been working with the Alaska Office of Management and Budget and other interested parties on a joint study of the issues surrounding the proposed sale. We expect to finalize a study report in March and hope that report can provide much of the information needed to develop specific decisions and legislative recommendations on the proposed sale.

The study has not turned up anything which looks like an insurmountable obstacle. There is a lot of concern about potential rate impacts and there will be differing opinions on what the sale price should be. All parties recognize that Federal legislation authorizing the sale will be needed.

The transfer initiative would further the NEPP IV Objectives of minimizing Federal control of energy production. It would strengthen local capability to handle future power needs in Alaska.

FY 87 BUDGET REQUEST

We are requesting new appropriations of $2,881,000 to continue our power operation, maintenance, and marketing programs. Our request also anticipates use of $400,000 deferred from FY 1985 balances for a total program of $3,281,000. This is the same as the FY 1986 appropriation level.

The request contemplates $2,459,000 for normal, continuing operations and maintenance functions, including $440,000 for major replacement and maintenance items. This includes completion of the program to replace PCB transformers and continuation of the summer maintenance program on the Snettisham line. The balance of the request -- $822,000 -- covers all administrative and management costs for APA.

As mentioned earlier, we propose to continue net-billing arrangements for the operations contract and wheeling at Snettisham and to establish a net-billing arrangement for operations at Eklutna.

FY 1987 sales are estimated at 338 million kilowatt hours with revenues of $9,310,000. The revenues include a $737,000 increase due to the proposed modified repayment criteria.

Finally, we have emergency funds in the amount of $200,000 made available in the FY 1984 Appropriations Act. Fortunately, we have not had to use any of these funds. Our request contemplates that these funds will remain available for use in FY 1987. We believe this remains an appropriate level of emergency funding for our programs.

I would be happy to answer questions and provide additional data to your Committee as needed.

Thank you.

February 1986

Biographical Notes -- Robert J. Cross
Administrator, Alaska Power Administration
Department of Energy

Mr. Cross was appointed Administrator of the Alaska Power Administration in June 1976. He has been on the Alaska Power Administration (APA) staff since the agency was formed in 1967. He was a staff engineer in the APA Planning Division between 1967 and 1973, and Planning Division Chief from 1973 to 1976.

Mr. Cross entered Federal Service in 1956 as a hydraulic engineer with the Bureau of Reclamation. Between 1956 and 1967, he had planning assignments with Reclamation in Colorado, Wyoming, Nebraska, and Alaska with a 2-year break for active service in the U. S. Army.

Mr. Cross is 52, and a native of Lincoln, Nebraska. He attended public schools in the states of Nebraska, Washington, and New York, and is a Civil Engineering graduate from the University of Colorado. Cross has been a resident of Juneau, Alaska, since October 1964.

Statement of Peter T. Johnson
Administrator
Bonneville Power Administration
FY 1987 Appropriations Hearings

Mr. Chairman and Members of the Committee. It is a pleasure to come before you today to present Bonneville Power Administration's FY 1987 Budget.

BPA'S DYNAMIC ENVIRONMENT

BPA was created on August 20, 1937, by the Bonneville Project Act. FY 1987 will mark 50 years of providing low-cost, reliable electric service to the Pacific Northwest. I am pleased to tell you that BPA nears its 50th anniversary healthy and unwaivering in its commitment to pursue its mission with efficiency and professionalism.

But these are dynamic times. The effect of the recent collapse of gas and oil prices on our California markets and continuing uncertainty regarding the future of the aluminum industry are just two of the challenges that face us as a utility. As a Federal agency, we are also facing potential change--both in terms of ownership and in the way we repay the Federal investment in the Pacific Northwest power system.

The President's FY 1987 budget calls for legislation that would transfer BPA's transmission system and the related power generation now operated by the Corps of Engineers and the Bureau of Reclamation to non-Federal ownership or control.

The budget proposal assumes that defederalization will not take effect until the beginning of FY 1988, to allow time to work out numerous implementation issues. The budget proposal further assumes that BPA would be sold at a price equal to the unpaid Federal investment--approximately $8.85 billion. I want to emphasize that these are assumptions for budget purposes only. A proposed sale price and date of transfer will be developed following an extensive public review process.

Through that process the administration will seek the views of various concerned groups and individuals. A task force is currently developing a detailed work plan to move ahead with this process. There are many complex questions that must be raised and dealt with as we move forward, and we will be active participants in the evaluation of how the agency might be restructured.

Although the budget assumes that BPA will be sold to non-Federal interests, in the interim the budget also calls for legislation changing the way BPA repays the Treasury for the Federal investment in the Northwest power system. The revision would put BPA on a fixed, straight-line amortization schedule for each power investment financed by appropriations. This proposal would add $139 million to BPA's FY 1987 Treasury payment of approximately $654 million, and would increase annual Treasury payments by between $111 and $115 million in subsequent years. We are looking closely at the impact this increase would have on our rates, and on our FY 1987 revenue requirement.

FISCAL SUMMARY

During FY 1985 strong fiscal management paid off for BPA. Although our revenues underran projections, a combination of underruns in fixed costs and effective management of controllable costs allowed us to carry out our program and more than meet our Treasury payment target by transferring approximately $686 million to the Treasury. This final audited figure is approximately $16 million more than the preliminary estimates which are shown in the budget. This total includes approximately $237 million in amortization payments for investments by the Corps of Engineers, Bureau of Reclamation, and BPA, and $366 million for interest payments.

On July 1, 1985, new rates went into effect that will be in place for a 27-month period covering all of FY 1986 and FY 1987. An increase of only one percent in priority firm rates provided much needed rate stability to the region, after dramatic increases since the mid-seventies.

Bonneville's FY 1986 revenues are being adversely affected by such forces as lower than normal rainfall last fall, the plight of the aluminum industry, and the impact of falling gas and oil prices on sales of surplus energy outside the region. This combination of forces poses a very real threat to meeting our FY 1986 revenue requirements and represent a distinct management challenge. As yet, we are unable to predict the outcome. However, we are closely monitoring costs, and still plan to meet our $670 million Treasury payment in FY 1986.

We are supporting Federal deficit reduction goals. Treasury borrowing for Bonneville's FY 1986 capital program is being held to $330 million, and a reduction of almost $2.5 million has been applied to our FY 1986 administrative expenses under the sequestration procedures of the Gramm-Rudman-Hollings Act.

Because of our continuing commitment to controlling costs, BPA's FY 1987 current services budget, at $2.9 billion, is less than one half of one percent--just $13 million--higher than our FY 1986 budget. BPA's rates were set through FY 1987 in the 1985 rate proceeding. It is too early to assess how recent events may impact our FY 1987 fiscal situation. We could, however, experience revenue shortfall due to the softness of California markets caused by the drop in oil and gas prices.

During FY 1987 we plan to borrow $276.1 million from the Treasury for transmission system planning and construction, energy conservation, and mitigation of the impacts on fish and wildlife of the Federal Columbia River Power System. Under the current services budget, our planned Treasury payments include $410 million in interest, and $149 million for amortization. At the end of FY 1987 BPA will have retired over $1.2 billion of the Federal investment, and will have paid a cumulative $4.2 billion in interest.

Before I describe BPA's FY 1987 program to you in more detail, I would like to discuss some of our recent achievements.

DIRECT SERVICE INDUSTRIES

Depressed world market prices for aluminum continue to create financial problems for most Northwest aluminum companies. This is of concern to the entire region because a healthy Pacific Northwest aluminum industry helps keep power rates more stable for all BPA customers. Although the recent spot market price for aluminum ingot has risen from a low of about 43 cents per pound to about 59 cents per pound, it remains significantly below both historical ingot price levels and long run unit costs of most plants in the region. During 1985 we offered temporary discounts to BPA's direct service industrial customers (the DSI's). These discounts were made available only under circumstances which would maintain BPA's total revenues and planned Treasury payments.

These were short-term solutions. We are now undertaking actions to assure long-term stability. Following the 1985 rate proceedings we conducted a DSI Options Study to seek solutions to problems associated with the instability of DSI loads.

Based on the results of the study and on an extensive public process, we are focusing on three proposals. The first, a variable rate proposal, would offer aluminum companies a power rate that would fluctuate with changes in the market price for aluminum. We are studying a second rate proposal that would create a long-term link between DSI and preference customer rates. Finally, we are looking at joint-sponsorship of modernization programs at the region's aluminum smelters to achieve greater efficiencies in their consumption of electric energy.

SUPPLY SYSTEM

BPA recently reexamined its resource plans for the FY 1988 through FY 1992 time period in its 1986 Resource Strategy. The Strategy, which was just finalized, concluded that the probability of there being a need to restart construction of Supply System Projects 1 and 3 (WNP-1 and WNP-3) through FY 1992 was not great enough to warrant the inclusion of construction restart costs in the outyear estimates of our FY 1987 budget. Net reductions in outyear estimates of as much as $140 million from the levels contained in our FY 1986 budget reflect the decrease in debt service requirements associated with deferring construction beyond FY 1991.

Another very important achievement during FY 1985 was the settlement of a lawsuit brought against BPA for delaying construction of WNP-3 in May 1983. BPA and the four investor-owned utilities, which owned 30 percent of WNP-3, reached an agreement in September 1985. Damages stemming from the suit, if successful, could have amounted to more than $2 billion.

WNP-2 became operational in December 1984. During FY 1985, the plant's capacity factor was 54 percent. This was down from the planned 70 percent plant factor, primarily because of the delay in commercial operation from July 1984 to December 1984, as well as recirculation pump problems the project had. Nevertheless, the plant's power made a significant contribution to BPA's revenues during a period of poor hydro conditions.

THE FY 1987 BUDGET

FY 1987 budget levels under both current services and the modified repayment proposal are compared below with the FY 1986 current services program. A short discussion of the more substantive current services program plans for FY 1987 is also provided.

PROGRAM	FY 1986	FY 1987	
		Current Svcs.	Repymt. Prop.
		(in thousands	of dollars)
Resource Planning, Acquisition, and Oversight	967,300	955,900	955,900
Residential Exchange	1,084,200	1,109,600	1,109,600
Energy Conservation	106,800	117,500	117,500
System Planning and Construction	249,900	187,100	187,100
Operating Programs	166,900	187,100	187,100
Reimbursable	47,400	48,700	48,700
Interest	188,900	211,300	194,600
Associated Project Costs	114,200	121,700	143,500
Total Program Obligations	2,925,600	2,938,900	2,944,000
Capital Transfers	367,000	321,100	455,400

RESOURCE PLANNING, ACQUISITION, AND OVERSIGHT

The resource planning, acquisition, and oversight program remains relatively stable, reflecting current forecasts of a substantial energy surplus until the mid to late 1990's. Consistent with it's Resource Strategy, BPA is developing programs which provide a capability to meet an unexpectedly rapid load growth without prematurely committing BPA to costly, large-scale resource acquisitions.

The slight decrease in this program area between FY 1986 and FY 1987 reflects a reduction in WNP-2's expenditures as construction contracts are closed out. FY 1989 through FY 1991 budget estimates for WNP-1 and WNP-3 have been reduced to reflect deferred construction of those plants beyond FY 1991, consistent with the 1986 Resource Strategy.

RESIDENTIAL EXCHANGE

The budget includes about $1.1 billion for the residential energy exchange program created by the Pacific Northwest Power Act. The exchange program provides rate relief to homes and small farms served by about 25 utilities. Approximately 80 percent of the $1.1 billion will be recovered from these utilities. The balance, $228.6 million, will be paid by BPA's other ratepayers. The increase from FY 1986 to FY 1987 in exchange costs is due to a combination of four factors: increases in utilities' average system costs, load growth, new utilities entering the exchange, and the level of BPA's own rates.

CONSERVATION

Funding of $117.5 million is projected for Bonneville's conservation program in FY 1987. In formulating the FY 1987 program, BPA took into account its revised load forecast and the Northwest Power Planning Council's 1986 Power Plan. Emphasis continues to shift toward development of the capability to acquire savings in the non-residential sectors of electricity use.

BPA's funding requirement for residential conservation programs will be reduced to an estimated $56.2 million in FY 1987, while funding for commercial and industrial programs will increase to $47.3 million in areas believed to have high savings potential in the Pacific Northwest. A $10.9 million increase over FY 1986 in programs for public agencies and other customers is almost entirely devoted to initial implementation of Model Conservation Standards (MCS) in new residential and commercial structures. MCS efficiencies, if not captured in initial design and construction, are lost to the region as opportunities for cost-effective savings.

As BPA has gained experience in the accomplishment of conservation, its performance against budget targets has become more predictable. During FY 1985 BPA completed 95 percent of the planned program we described to you a year ago.

SYSTEM PLANNING AND CONSTRUCTION

BPA's system planning and construction program funding is projected at $187.1 million. This amount includes $57.0 million for continued construction of facilities initiated in prior years, $120.9 million for "new start" additions to the power system and the replacement of aging and obsolete power system equipment, and $16.3 million for research and development in electric power transmission and BPA's EPRI contribution.

A major FY 1987 new start is the addition of reinforcements to BPA's system to support construction of a Third AC Intertie between the Pacific Northwest and the Pacific Southwest. These reinforcements will increase interregional AC capacity by 1600 megawatts. Progress has been made, but much work remains to be done. Nevertheless, unless utilities in the Northwest and Southwest, including BPA, determine that this project is economically feasible, construction will not begin. Long term oil and gas prices will certainly figure in this evaluation.

FISH AND WILDLIFE

BPA's FY 1987 fish and wildlife program will be funded at $44.2 million, $10 million more than in FY 1986. This program level reflects the maturity of BPA's role in achieving the fish and wildlife objectives of the Pacific Northwest Power Act and our commitment to supporting the Planning Council's Fish and Wildlife Program.

OTHER PROGRAMS

BPA's other program areas show little change, with minor increases mainly due to inflation and increased interest costs. Despite constrained funding and manpower levels in recent years, BPA is internationally respected in the utility industry for the efficient and reliable operation, maintenance, and scheduling of its extensive power grid.

CONCLUSION

BPA has come through a period of great turmoil. We have resolved many difficult issues and are entering a period of hard-earned stability. Because BPA plays a critical role in the revitalization of the Northwest economy, we must proceed agressively to meet the challenges ahead.

Our power resources appear to be more than adequate to meet regional needs for the decade, but we are now faced with effectively marketing the surplus in a time of dropping oil and gas prices. This is a challenge in which BPA has a great financial stake.

Recognizing a common energy destiny, we have developed strong working relations with utilities outside our region. In the future we will continue to plan cooperatively for an efficient use of Canadian and Pacific Northwest resources that will benefit the Northwest, Canada, and California.

Most importantly, we have achieved stable rates and become a lean, efficient organization. In the year ahead we will continue to work to stabilize our revenues, so that BPA can meet its repayment obligations to the Treasury.

This concludes my prepared statement. I will be glad to answer any questions you might have.

PETER T. JOHNSON
Bonneville Power Administrator

PETER T. JOHNSON was born in Boise, Idaho in 1932. He received a Bachelor's Degree from Dartmouth College in 1954. The following year he was awarded a Master's Degree in Business Administration from Amos Tuck School of Business in Dartmouth. He completed his military service as a Contracting Officer in the U.S. Air Force and served in the Idaho Air National Guard.

From 1957 to 1968, Mr. Johnson worked for the MacGregor Triangle Company of Boise, a firm specializing in heavy highway and utility construction. He was elected a Director and Executive Vice President of the company in 1964.

In 1968, he joined Trus-Joist Corp., an international firm manufacturing roof and floor structural systems. He rose to President of the firm in 1971 and Chief Executive Officer in 1975, overseeing the operations of the company during a period of dynamic growth.

Mr. Johnson became a private business consultant in 1979. He co-chaired a Governor's Management Task Force in Idaho during 1980, seeking ways to improve the efficiency and productivity of state government. He also was a member of President Reagan's Transition Team in 1980-81.

In May 1981, Mr. Johnson was appointed Bonneville Power Administrator by the Secretary of Energy. Bonneville Power Administration is an arm of the U.S. Department of Energy.

As Adminstrator, Mr. Johnson is responsible for overseeing all activities of the Federal power marketing agency, including operation of one of the world's largest high-voltage transmision systems. He directs the making of policy for BPA and guides Bonneville's efforts to implement the Pacific Northwest Electric Power Planning and Conservation Act.

The Administrator is ultimately responsible for decisions on acquisition of cost-effective power resources by BPA to serve the needs of the region. The Act gave BPA the mandate to acquire electric resources, giving conservation and renewable resources priority over conventional generating resources.

He serves on the U.S. Committee of the World Energy Conference, the Board of Directors of the Electric Power Research Institute, and is Chairman of the United States Entity under the Columbia River Treaty with Canada.

Statement of Harry C. Geisinger
Administrator
Southeastern Power Administration
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman and Members of the Committee:

It is a pleasure to appear before you today to discuss Southeastern Power Administration's (SEPA) budget request for fiscal year 1987.

Southeastern Power Administration, with headquarters in Elberton, Georgia, markets hydroelectric power from projects constructed and operated by the U. S. Army Corps of Engineers located in 10 southeastern states. Southeastern has no transmission lines and accomplishes the delivery of power by wheeling agreements with power utilities in the area that have the necessary transmission facilities.

Southeastern presently markets power from 22 multiple-purpose projects to 248 power purchasers. Estimated power revenues for FY 1987 are $130,417,000, reflecting the sale of 3,092 megawatts of installed capacity with 7.4 billion kilowatt-hours of energy.

Southeastern's overall repayment status is as follows: from inception in 1950 to September 30, 1985, operating revenues available for repayment totaled $1,233,859,000. These revenues were allocated to payment of $482,583,000 of annual operating expenses, $444,266,000 of interest expense, and $310,010,000 of capital investment in electric plant. The total capital plant on September 30, 1985, of

$1,302,717,000, less the amount repaid, leaves a balance of $992,707,000 to be repaid.

FY 1987 BUDGET

A funding level of $21,736,000 is requested in the President's 1987 Budget to effectively carry out Southeastern's mission. The FY 1987 program level request represents an increase of $7,001,000 over the amount authorized for the current year.

A comparison by activities of the FY 1987 Operations and Maintenance budget request with the amounts available in FY 1986 is as follows:

	FY 1986	FY 1987	Difference
System Operation and Maintenance	$ 1,856,000	$ 2,031,000	+$ 175,000
Purchase Power and Wheeling Charges	12,879,000	19,705,000	+6,826,000
Total Program Level	14,735,000	21,736,000	+7,001,000
Deferral Applied	-14,735,000	-2,089,000	
New Budget Authority Requested		19,647,000	

SYSTEM OPERATION AND MAINTENANCE

The request of $2,031,000 for the System Operation and Maintenance activity will provide funds for the negotiation and administration of wheeling and power sales contracts; development and review of rates to assure repayment of power costs; scheduling the generation of power and supervision of power deliveries; and direction and support of

Southeastern's power marketing program. This amount represents a $175,000 increase over the amount available in the current year.

The major portion of the request for this activity provides funding for personnel compensation and related costs and reflects the continuation of the current manpower level of 40 full-time equivalents. The request provides for increases resulting primarily from statutory within-grade and Performance Management Recognition System increases, terminal leave payments, additional personnel benefit costs, and higher administrative costs for support functions.

No increase in the manpower level of 40 full-time equivalents is requested for FY 1987, although significant workload increases will occur. As a result of changes in the marketing program, Southeastern will serve significantly more customers within enlarged marketing areas under different marketing conditions, affecting workload throughout the agency. Southeastern will strive to accomplish these workload increases within the current manpower level through improved management of employee resources and additional use of automation.

PURCHASE POWER AND WHEELING

The major portion of the budget request, $19,705,000, is required for the Purchase Power and Wheeling activity and represents an increase of $6,826,000 over the amount available in the current year.

Funds provided for this activity are used to pay amounts charged the Government under contractual arrangements for (1) delivery of power over non-Federal systems to load centers of preference customers for the account of the Government, (2) purchase by the Government of energy, if necessary, during adverse water periods, and (3) support capacity required to meet commitments for the Jim Woodruff Project under adverse water conditions.

In the absence of ownership or operation of transmission facilities, Southeastern carries out its marketing program by utilizing the existing transmission systems of the power utilities within its marketing area. This is accomplished through "wheeling" arrangements between Southeastern and each of the area utilities who have transmission lines connected to the projects, under which the utility agrees to deliver specified amounts of Federal power to customers of the Government and Southeastern agrees to compensate the utility for the transmission service performed.

Southeastern has been deeply involved in the development and implementation of new power marketing policies for its respective systems which will ultimately allow all available Southeastern power, both capacity and energy, to be marketed to preference customers in the future. These new policies have been implemented as new contracts were executed for the respective marketing areas.

Contracts providing for the sale of all power to both existing and new preference customers which are expected to be in effect during FY 1987 cover the following Southeastern sales:

1. That portion of the power produced in the Georgia-Alabama System to be marketed within the service areas of South Carolina Public Service Authority, South Carolina Electric & Gas Company, and Duke Power Company.

2. That portion of the power produced in the Cumberland System which is wheeled outside the TVA service area as well as that portion to be sold within the TVA service area.

3. All power produced in the Kerr-Philpott System to be marketed in the Appalachian Power Company, Virginia Power, and Carolina Power & Light Company service areas.

4. That portion of the power produced in the Cumberland System and designated to be marketed in the service areas of Carolina Power & Light Company (Western Division), and Kentucky Utilities.

With respect to that portion of the power produced in the Georgia-Alabama System and sold in the Southern Company service area (Georgia, Alabama, Mississippi, and the panhandle of Florida), wheeling charges will be handled, to the extent possible, by "net billing" with the affected utilities during this period. Decreasing quantities of capacity will be sold to the utilities through May 1991, and charges to the utilities for this capacity will be used to offset charges by the utilities for transmission services provided. During FY 1987, increased funding will be required for payment of transmission services under contractual arrangements with Georgia Power Company, since capacity sales to the company will be insufficient to fully "net bill" the charges for transmission services provided by the Company.

Additionally, purchase power and wheeling funds are required under the provisions of existing contracts for the sale of power produced at the Jim Woodruff project and now sold in the Florida Power Corporation service area.

Southeastern's projects are grouped for marketing purposes into four financially independent systems. The power systems, customer locations, and status of wholesale rate adjustments are hereinafter discussed. Southeastern has accomplished all of its recent rate adjustments with a minimum of difficulty.

GEORGIA-ALABAMA SYSTEM

The Georgia-Alabama System is comprised of the Allatoona, Buford, Carters, Clarks Hill, Walter F. George, Hartwell, Robert F. Henry (formerly Jones Bluff), Millers Ferry, Richard B. Russell, and West Point projects. Two of the four units at Carters are pump-generator units. Power from the system is sold to customers located in Georgia, Alabama, North and South Carolina, Mississippi, and Florida.

Power rates for this system, applicable from October 1, 1985, through September 30, 1990, were approved on an interim basis by the Deputy Secretary of Energy on September 30, 1985, and forwarded to the Federal Energy Regulatory Commission for final approval.

The Richard B. Russell Project began initial generation in January 1985, with three conventional units (225,000 kw) beginning initial generation during FY 1985, and the remaining conventional power unit, (75,000 kw) scheduled to be online during FY 1986. The four pump-generator units, which will provide an additional nameplate capacity of 300,000 kw, are scheduled to begin operation during 1990.

The addition of this project's nameplate capacity of 600,000 kw represents the most significant increase in the marketing product of Southeastern Power Administration since 1975.

CUMBERLAND BASIN SYSTEM

The Cumberland Basin System includes the Wolf Creek, Center Hill, Dale Hollow, Old Hickory, Cheatham, Barkley, J. Percy Priest, Cordell Hull and Laurel projects. The projects are located on the Cumberland River, or its tributaries, and are located in northern Tennessee and southern Kentucky.

System power is marketed to customers located in Tennessee and in portions of Mississippi, Kentucky, and Illinois. Power rates, applicable from July 1, 1984, through June 30, 1989, were approved by the Federal Energy Regulatory Commission on a final basis on December 27, 1984.

KERR-PHILPOTT SYSTEM

Power from the John H. Kerr and Philpott projects, located in the Roanoke River Basin in Virginia, is marketed to customers in Virginia and North Carolina. The Federal Energy Regulatory Commission approved power rates for this system on a final basis on July 6, 1983, effective April 1, 1983, for the period ending September 30, 1986.

JIM WOODRUFF SYSTEM

The Jim Woodruff Project is located on the Apalachicola River on the Georgia-Florida state line. All dependable capacity available at the Project is sold to preferred customers in peninsular Florida.

Revised power rates for the Jim Woodruff Project were approved on an interim basis by the Assistant Secretary for Conservation and Renewable Energy and were placed in effect on August 20, 1982. Final approval of the rates was issued by the Federal Energy Regulatory Commission on January 10, 1983, for the period ending August 19, 1987.

POTENTIAL ADDITIONAL RESOURCES

Southeastern has been coordinating with various District offices of the Corps of Engineers in examining the feasibility of installing generating units at several existing projects in the area within which Southeastern has marketing responsibility and at selected projects outside the area.

The potential hydropower project examinations that Southeastern will be performing during fiscal year 1987 include but are not limited to the following:

(1) the replacement of the William Bacon Oliver Lock and Dam in Alabama, (2) the Bluestone and Tygart projects in West Virginia, (3) four existing reservoirs in the Green River Basin in Kentucky, (4) the Celina Project on the Cumberland River, (5) locks and dams on the Ohio River, (6) projects in the Lehigh River Basin in Pennsylvania, and (7) the addition of hydropower to existing projects in Indiana and Ohio.

POWER MARKETING POLICY FORMULATION

Southeastern has been deeply involved in the formulation of new written power marketing policies for its several systems, with broad public participation, to replace previous ad hoc approaches to power marketing. Major issues requiring attention in each instance include marketing area, allocations of power, handling of pumped-storage energy, utilization of area utility systems, wholesale and resale rates, and conservation measures. The major goal of each policy is to market all available power to preference agencies.

Southeastern has published final marketing policies for its ten-project Georgia-Alabama System, its nine-project Cumberland System, and its two-project Kerr-Philpott System. Policy action with respect to the Jim Woodruff System is not anticipated in the near future since all dependable capacity and energy is presently being sold to preference customers.

All Southeastern power marketing policies contain guidelines, including proposed marketing areas and allocation formulas, for marketing the available power for approximately the next ten years.

POWER MARKETING POLICY IMPLEMENTATION

Long-term contractual arrangements implementing the Cumberland System Power Marketing Policy have been negotiated and placed into effect with the Tennessee Valley Authority (TVA), benefiting 160 preference customers within the TVA service area, and with preference customers in portions of Mississippi, Kentucky, and Illinois.

The Cumberland Policy also provides for the sale of Cumberland power to public bodies and cooperatives located in the Kentucky Utilities Company service area and in the Western Division of the Carolina Power & Light Company area. Service to these preference customers will be delayed pending development of wheeling contracts with these utility systems. Southeastern plans to move expeditiously to complete the marketing program in this area as soon as possible.

New long-term arrangements have been placed in operation for the western portion of the Georgia-Alabama System implementing the Georgia-Alabama System Power Marketing Policy. Contracts have been executed with the operating utilities of the Southern Company (Georgia, Alabama, Mississippi, and Gulf Power Companies) and preference customers in their service areas. Under these arrangements, the conversion to the policy of ultimately marketing all power to preference customers will be phased in over a seven-year period.

Negotiations have been completed and contracts executed with South Carolina Public Service Authority, Duke Power Company, South Carolina Electric & Gas Company, and preference agencies within their service areas covering the marketing of power produced in the Georgia-Alabama System and sold in the eastern portion of that System. These negotiations added 26 new preference customers.

Negotiations are currently in progress with Appalachian Power Company, Virginia Power Company, Carolina Power & Light Company, and preference entities within their service areas to implement the Kerr-Philpott Power Marketing Policy. These negotiations are expected to add some 48 new preference customers.

This concludes my statement, Mr. Chairman, and I would be happy to answer any questions that you may have.

Department of Energy
Southeastern Power Administration
Elberton, Georgia 30635

February 18, 1986

HARRY C. GEISINGER

Harry C. Geisinger became the fifth Administrator of the Southeastern Power Administration on November 30, 1981, having been appointed to that post by U. S. Secretary of Energy James B. Edwards.

Established in 1950, the Southeastern Power Administration markets federal hydroelectric power produced at Corps of Engineers' constructed projects in the States of Georgia, Florida, Alabama, Mississippi, North Carolina, South Carolina, Kentucky, Tennessee, West Virginia, and Virginia. Based in Elberton, Georgia, Southeastern presently markets power produced at 22 multiple-purpose projects with installed capacity of 3,092 megawatts.

Prior to his appointment, Geisinger owned Geisinger Advertising and Public Relations in Atlanta. He has also served as president of Carbon Fuels, Incorporated, in Atlanta, and as president of Uniway of East Tennessee, Incorporated, in Blountville, Tennessee.

Geisinger served in the Georgia House of Representatives from 1968 through 1974 and was minority whip from 1970-1974.

He received an associate of arts degree at Lincoln College in 1958 and later studied business administration at the University of Cincinnati. He served in the U. S. Navy from 1953-1957.

Born in Cincinnati, Ohio, in 1932, he is married to the former Patricia Virginia Capdau of New Orleans. The couple has three children and reside in Dunwoody, Georgia, where Mr. Geisinger has been active in community and youth activities.

Statement of Ronald H. Wilkerson
Administrator
Southwestern Power Administration
Department of Energy
FY 1987 Appropriations Hearings

Mr. Chairman and Members of the Committee:

It is a pleasure to present the Southwestern Power Administration's (SWPA) budget request for Fiscal Year 1987. A few summary statistics provide a broad outline of the SWPA's projected financial request.

	Adjusted FY 1986*	FY 1987	Difference
Total Budget	$37,954,000	$ 38,580,000	$+ 626,000
Available Prior Balances (Carryover Funds)	$-8,774,000	$-13,243,000	$-4,469,000
Appropriations	$29,180,000	$ 25,337,000	$-3,843,000

* FY 1986 appropriations have been reduced by $320,000 in administrative areas.

The proposed $626,000 increase in the budget represents a rise of only 1.6 percent. More importantly, due to carryover funds, I am asking for a $3,843,000 decrease in the SWPA's annual appropriations. The $13,243,000 deferral of unused purchase power funds and operations and maintenance funds resulted from a combination of factors. Generous rainfall in FY 1985 led to favorable hydroelectric energy production thereby significantly reducing the need for power purchases. In addition, SWPA sold its Western Loop transmission facilities in FY 1985 producing a $2,000,000 savings in previously appropriated maintenance funds. The SWPA's FY 1987 appropriation request will continue an efficient and effective program consistent with the National Energy Policy Plan.

MISSION

Southwestern Power Administration (headquartered in Tulsa, Oklahoma) markets hydroelectric power generated at Federal dams, at cost-based rates, in a manner consistent with sound business principles, giving preference in the sale to public bodies and cooperatives. SWPA schedules the operation of the Corps of Engineers' generating facilities and operates SWPA's transmission facilities in a safe, reliable manner, consistent with good utility practice. SWPA facilitates the development of environmentally clean, renewable resources and energy conservation practices.

STAFFING

The requested FY 1987 staffing level is 186 FTE positions, the same as FY 1986.

FY 1987 BUDGET INFORMATION

SWPA's total budget falls into three general categories: (1) Purchase Power and Wheeling, (2) Operation and Maintenance, and (3) Construction.

	Adjusted FY 1986	FY 1987	Change
Purchase Power and Wheeling	$21,624,000	$20,959,000	$-665,000
Operation and Maintenance	10,874,000	11,802,000	+928,000
Construction	5,456,000	5,819,000	+363,000
Total Budget	$37,954,000	$38,580,000	$+626,000

I will summarize the major factors behind the proposed figures in each of these categories.

(1) Purchase Power and Wheeling

When the Federal system fails to generate enough hydroelectric energy to meet contractual obligations, as is the case during drought conditions, SWPA must purchase energy from other sources. Certain SWPA contracts also require routine purchase of energy on a reimbursable basis regardless of rainfall. In addition to purchasing energy, the agency pays for transmitting, or wheeling, power over facilities owned by other utilities.

The proposed $20,959,000 budget for purchase power and wheeling costs is a reduction of $665,000 from FY 1986. The reduction is due, in part, to a change in the method of estimating these costs. The FY 1986 budget was based upon needs for five months of critical water conditions, whereas the FY 1987 budget proposal will take care of needs for an entire year under average water conditions. Although the total amount has changed only slightly, the new approach better represents the routine purchase needs and the drought purchase needs, and is compatible with similar projections used in SWPA's repayment studies. As explained later in my statement, this portion of the budget will be reduced further over the next several years.

(2) Operation and Maintenance

Operation and Maintenance includes the power marketing program, operation of the transmission system, maintenance of all physical facilities, and general program management. The FY 1987 budget proposal in this category represents an increase of $928,000, or 8.5 percent, over the current year. Included are built-in increases of $192,000 for pay costs and benefits, a net increase of $647,000 in various other expenses including rent and service contracts, and $89,000 due to the administrative reduction reflected in the adjusted FY 1986 Operations and Maintenance amount.

(3) Construction

The proposed $5,819,000 budgeted for Construction activities in the coming year is an increase of $363,000 or 6.7 percent, over FY 1986. Some construction of transmission facilities is necessary to make the Government's system compatible as utilities interconnected to the SWPA's main grid modify and upgrade their facilities. The need to accommodate increasing customer loads also adds modestly to the rise reflected in this proposal.

CURRENT FINANCIAL STATUS

I am pleased to report to this Committee that SWPA is in good financial condition. All available power is under contract and is widely distributed among the six states. We experienced excellent rainfall during FY 1985 which, when coupled with sound rate levels, produced revenues in excess of $120,000,000. We also completed FY 1985 with a large amount of hydroelectric energy stored in our energy banking accounts. The combination of this stored energy and the heavy rainfall filling the system's reservoirs to maximum capacity during the first quarter of FY 1986 placed SWPA in an excellent position to meet winter peak loads and continue its recent financial success. SWPA met its repayment obligations for the fourth straight year, in addition to paying all operation, maintenance, interest, and administrative costs. The amount repaid on principal in FY 1985 was $39,700,000, bringing the agency's cumulative repayment to $102,000,000 on a total repayable investment of $839,000,000, or 12 percent.

RATES

Timely rate increases have helped SWPA maintain its good financial standing. The Deputy Secretary of Energy approved, on an interim basis, a one percent rate increase for SWPA's integrated system effective October 1, 1985, through September 30, 1989. Confirmation and final approval by the Federal Energy Regulatory Commission is pending.

REDUCTION IN ENERGY PURCHASE REQUIREMENTS

Beginning in FY 1984, SWPA reported to this Committee its intention to convert Full Load Factor power contracts, scheduled to expire in FY 1985, FY 1986, and FY 1987, to 1200-hour per year peaking power contracts. These ongoing conversions reduce the Government's annual energy obligations, and result in a corresponding savings in appropriation requests estimated to be $2,200,000 for FY 1985, $4,500,000 for FY 1986, and $6,900,000 for FY 1987. SWPA has also converted a number of borderline contractual arrangements to allow customers to pay suppliers directly for energy previously paid by SWPA through appropriations. These new arrangements promise to reduce SWPA's appropriation needs by an estimated $1,900,000 for FY 1985, $7,200,000 for FY 1986, and $8,100,000 for FY 1987.

HYDROPOWER DEVELOPMENT

SWPA, working closely with the U.S. Army Corps of Engineers, achieved a historic first by contracting with the Sam Rayburn Municipal Power Agency for the 100% non-Federal financing of the Town Bluff hydropower project in Southeast Texas. Other non-Federal entities have shown an interest in financially sponsoring other Federal hydroelectric projects in SWPA's service area. Potential development amounts to about one million kilowatts, which would be equivalent to 49% of SWPA's generating capability. Although there now is a power surplus in our service area, the additional hydroelectric generation now under consideration could be brought on line in time to meet projected regional energy needs in the early to mid 1990's.

TRANSMISSION UTILIZATION

The Government's transmission system is extremely important, particularly in the manner in which it operates as part of the Southwest Power Pool, and is used by customers to transmit or wheel power. This sharing helps eliminate expensive duplication of facilities and thereby improves the economic condition of all parties. The constantly changing load patterns and economic exchanges of power do, however, require some modifications and additions to the Government's transmission facilities. As facility sharing continues, SWPA will explore arrangements to jointly finance modifications and additions to the Government's system. We are proceeding with this approach in the Southeast Missouri-Northeast Arkansas area and from Oklahoma through the Kansas area for possible north-south power exchanges with Western Area Power Administration and other utilities.

FACILITIES MANAGEMENT

During FY 1985, SWPA sold 277 miles of excess 138 and 69 Kv transmission lines, along with several substations and switching stations, known collectively as the Western Loop. The sale to Western Farmers Electric Cooperative was for $9,300,000; the Government investment was $6,100,000. Another accomplishment in the area of facilities management was the moving of two maintenance units from leased facilities in Muskogee and Ada, Oklahoma, to SWPA owned buildings in Gore and Tupelo, Oklahoma. The savings in lease payments at the former locations will completely pay back construction expenses of the new structures in less than ten years.

CLOSING

In conclusion, Mr. Chairman, SWPA's budget proposal for FY 1987 provides for the continuance of a dynamic program at a stable funding level. We have taken significant steps to reduce appropriation requests. SWPA remains committed to operating in a businesslike manner and maintaining rates sufficient to return all operating costs, along with the principal and interest associated with the construction of power generation and transmission facilities, to the U.S. Treasury. We appreciate the cooperation and recognition provided by the members of this Committee. I am privileged to serve as Administrator and work with your Committee, as well as with the customers and employees of the Southwestern Power Administration.

Department of Energy Information

P. O. Box 1619
Tulsa, OK 74101

Southwestern Power Administration

(918) 581-7473

BIOGRAPHY

RONALD H. WILKERSON

Ronald H. Wilkerson was appointed Administrator of Southwestern Power Administration (SWPA) on July 29, 1984 by the Secretary of Energy.

Headquartered in Tulsa, Oklahoma, SWPA is a regional agency of the U.S. Department of Energy (DOE) with responsibility for marketing Federal hydroelectric power in Kansas, Missouri, Oklahoma, Arkansas, eastern Texas, and Louisiana. SWPA's wholesale customers are 10 generation and transmission cooperatives, 45 municipal electric systems, and three military installations.

As Administrator, Wilkerson is responsible for marketing the output of 23 Federal hydroelectric projects at the lowest possible cost while fully repaying the Federal investment with interest. These projects have installed capacity of 2,150,350 kilowatts and generate an average of 5.6 billion kilowatt-hours of energy annually. Sale of power produces revenue of approximately $100 million annually against a budget of $38 million.

With about 190 employees at five locations, SWPA operates and maintains 1,400 miles of transmission lines and 26 substations in addition to scheduling and dispatching the power.

Prior to his appointment, Wilkerson was Manager of the Upper Columbia Area for the Bonneville Power Administration (BPA), a regional power marketing agency under DOE in the Pacific Northwest. He was responsible for BPA activities in eastern Washington, northern Idaho, and western Montana.

Arriving at BPA in 1961, Wilkerson progressively held more responsible positions within that organization resulting in extensive experience and expertise in the areas of customer service, power marketing, and engineering. This included serving as BPA District Manager in Kalispell, Montana, as well as assignments in Idaho Falls, Idaho; Seattle and Walla Walla, Washington; and The Dalles and Portland, Oregon.

Wilkerson is a Registered Professional Engineer, a member of the Institute of Electrical and Electronic Engineers, and serves on the Board of Directors of the Southwest Power Pool. He has received numerous awards for special acts and performance. A native of Montana, he received his Electrical Engineering degree from Montana State University.

Wilkerson and his wife, Sharon, have three sons and a daughter.

January 1986

STATEMENT OF

MR. WILLIAM H. CLAGETT

ADMINISTRATOR

WESTERN AREA POWER ADMINISTRATION

DEPARTMENT OF ENERGY

BEFORE THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

COMMITTEE ON APPROPRIATIONS

U.S. HOUSE OF REPRESENTATIVES

MARCH 19, 1986

Mr. Chairman and Members of the Subcommittee:

I am privileged to have the opportunity to discuss with you today the fiscal year (FY) 1987 budget proposal for the Western Area Power Administration (Western).

This past year has been extremely successful for Western, a situation which would not be possible without the support of this Subcommittee. As Western's Administrator, I look forward with enthusiasm to the challenges ahead. I believe the FY 1987 budget request will allow Western to meet those challenges, and help further the National Energy Policy Plan objectives of fostering an adequate supply of energy at reasonable costs consistent with sound business principles.

Mission, Organization, and Staffing

Western is a federally operated electric power marketing administration responsible for the delivery and sale of power to over 550 wholesale customers consisting of cooperatives, municipalities, public utility districts, irrigation districts, Federal and State agencies, private utilities, and reclamation project customers. The wholesale power customers, in turn, provide service to millions of retail power consumers in the States of Arizona, California, Colorado, Iowa, Kansas, Minnesota, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Texas, Utah, and Wyoming.

During FY 1987, Western will continue to be responsible for the operation and maintenance of over 16,490 circuit miles of transmission line, an estimated 242 substations, and various appurtenant power facilities in a 1.3-million-square-mile geographic area. Electric power marketed by Western will be generated at 51 hydropower plants operated by the Bureau of Reclamation (BuRec), the U.S. Army Corps of Engineers (Corps), and the International Boundary and Water Commission (U.S. Section). Additionally, Western will market the United States 24.3-percent entitlement (547 megawatts) from the coal-fired Navajo Generating Station near Page, Arizona. The United States share of the installed generating capacity of all these powerplants will be 9,105 megawatts (MW).

The FY 1987 budget request for Western provides for a personnel staffing level of 1,379 full-time equivalents (FTE) to accomplish Western's objectives, the same as FY 1986.

I am pleased to report to the subcommittee that during the past several months we have, with the assistance of the General Services Administration (GSA), obtained permanent office and service center space for our Sacramento Area Office, Bismarck District Office, and the Electric Power Training Center. This essentially completes present space acquisition needs for our organization.

BUDGET HIGHLIGHTS

For FY 1987, Western is requesting $240.3 million in new budget authority, an increase of $44.5 million above the FY 1986 appropriation level. The funds are for construction and rehabilitation of transmission lines and associated facilities; system operation and maintenance expenses; and for purchase power and wheeling expenses. This increase is attributable to increased purchase power and wheeling costs for the Central Valley Project (CVP) in California, for power system facility replacements and additions, including consolidation of transmission facilities at the Hoover Powerplant in southern Nevada, and for adjustments in the allocation of Western's administrative and general expenses.

In addition to our request for new budget authority, we are requesting FY 1987 obligational authority of $82.0 million for the Colorado River Basins Power Marketing Fund (CRB Fund), established pursuant to Public Laws 75-529, 84-485, 92-370, and 90-537, a decrease of $4.6 million from FY 1986. This decrease reflects completion of construction work in FY 1986 for the Fort Peck-Havre 230-kV Transmission Line in Montana, as well as lower estimates for purchase power costs for fuel replacement energy. Under the CRB Fund, encompassing the Colorado River Storage Project (CRSP), the Fort Peck Project, and the Central Arizona Project (CAP), all operation and maintenance and power marketing expenses (including a portion of similar expenses incurred by the BuRec and the Corps) are financed from project power receipts collected by Western. Receipts above actual project operating expenses are returned to the U.S. Treasury to repay Federal investments.

Specific appropriation or fund amounts requested in FY 1987 compared to funds appropriated in FY 1986 are as follows:

BUDGET REQUEST SUMMARY
(Dollars in Thousands)

Appropriation or Fund/Activity	FY 1986 Adjusted Appropriation	FY 1987 Request	Change
Construction, Rehabilitation, Operation and Maintenance			
Construction and Rehabilitation	$ 79,165	$ 83,985	+$ 4,820
System Operation and Maintenance	74,477	86,172	+ 11,695
Purchase Power and Wheeling	72,500	113,690	+ 41,190
Subtotal (Program)	$226,142	$283,847	+$57,705
Use of prior year balances (net)	- 30,300	- 43,538	- 13,238
Subtotal, Construction, Rehab., Operation and Maintenance	$195,842	$240,309	+$44,467
Colorado River Basins Power Marketing Fund	86,627	82,000	- 4,627
Total, Budget Request	$282,469	$322,309	+$39,840

CONSTRUCTION AND REHABILITATION

The total FY 1987 construction and rehabilitation program requirement is $84 million, including $77.7 million of new budget authority and application of prior year balances of $6.3 million.

Improvements to Facilities

During FY 1985, work was completed on 16 substation additions, 23 miles of transmission line, the 200 MW Miles City AC-DC-AC Converter Station, and 1 communications system addition. In the current fiscal year, we plan to complete work on 18 substation additions, 5 communication system additions, and 3 operation and maintenance (O&M) service building additions. Also, over 370 miles of transmission line will be reconductored, rebuilt, or constructed in FY 1986.

Of the FY 1987 total program activity requirement of $84 million, $30.5 million or 36 percent is needed to complete work on 10 substation additions, 3 O&M service center additions, and 1 communication system addition. Also, approximately 400 miles of transmission line will be reconductored, rebuilt, or constructed in FY 1987. Work will continue on the Western Colorado 345-kV additions and other transmission line improvements and substation equipment additions.

The planned installation of phase-shifting transformers (PSTs) on the Long Hollow-San Juan 345-kV Transmission Line is coincidental with the Western Colorado 345-kV additions. Inadvertent (loop) flow has been a problem on the major transmission lines in the Western United States for years. These unscheduled flows reduce the effective capacity of transmission lines. They are a significant problem because utilities are unable to make full use of their transmission system.

With discontinuance of the Western Systems Coordinating Council Loop Flow Administrative Procedures, transmission systems must now accommodate 100 percent loop flow and have had actual flow exceed transfer capability before requesting assistance from member systems. Extensive studies have indicated that PSTs on the new Long Hollow-San Juan 345-kV Transmission Line and on the existing Lost Canyon-Shiprock 230-kV Transmission Line can alleviate some of the problems with inadvertent flows.

Discussions are underway with neighboring utilities to advise them of the effects of these installations and to explore the use of PSTs in other locations.

Approximately $41.1 million or 49 percent of the total requirement of $84 million is for new contract awards for 5 transmission line additions and improvements in 4 states, 7 substation additions, and 3 O&M service center additions.

About $12.4 million or 15 percent of the total requirement of $84 million will be used to continue studies for future facilities. Highlights of significant studies follow.

Studies for Future Facilities

The California-Oregon Transmission Project

Since the Congress approved the California-Oregon Transmission Project (Project) plan in the FY 1985 Supplemental Appropriations Act (Public Law 99-88), the Project Participants have approved a Project Development Agreement (PDA) that provides for up to $27.1 million in non-Federal funds for continuation of environmental studies, power system studies, land services, engineering analysis, and design activities. Western is a party to the PDA and is providing services on a reimbursable basis for the Project. Those services include environmental work required by the National Environmental Policy Act and engineering work associated with the upgrade of the Federal CVP facilities. Western completed transmission tower tests in December 1985 confirming the ability to convert the existing 230-kV towers to 500-kV in the 200-mile uprate section of the 330-mile project. Since the upgraded facilities will still remain an important integral part of the CVP, Western plans to use appropriated funds to proceed with negotiations for perfection of its existing easements along the existing 230-kV right-of-way upon completion of the environmental process. The Project has not adopted an official schedule for an inservice date, but the latest estimate is for mid-1991. With the recent determination that additional facilities would be needed in the south-central part of California in order to fulfill various commitments in the Project agreements, some delays in the Project may occur. Also, an indepth study of Project alternatives other than those described in the Project agreements has been suggested by one of the Participants which could result in Project delays. Western plans to begin the construction phase of the Project in FY 1988 on those elements of the Project for which we have construction responsibility, including substations at Redding and Tracy and the line upgrade. The portion of the Project for which Western is the construction manager is estimated at about $170 million, and will be totally funded with up-front financing by the other participants. We will keep the Subcommittee informed of our progress and the major developments.

The Pacific Northwest-Pacific Southwest Intertie

Mead-Phoenix DC Intertie (Phase I): Western, Salt River Project, the Southern California Public Power Authority, and the Modesto-Santa Clara-Redding Public Power Agency are the Project participants. Developmental work for the Mead-Phoenix DC Intertie is nearly completed and a commitment to construct is scheduled for the late 1986 to mid-1987 time period, with a scheduled inservice date of 1991 or 1992. Except for Western's planning expenses, the Project will be financed by non-Federal participants.

Mead-Adelanto DC Intertie (Phase II): The Mead-Phoenix Project participants are also planning possible reinforcement to the transmission system between southern Nevada and southern California. If built, this project will be interconnected with Phase I at Western's Mead Substation.

Mead-Northwest DC Intertie (Phase III): Western and interested entities have conducted extensive feasibility studies in both regions. In concert with 39 identified utility entities, Western will continue planning work in 1986, including preliminary technical studies, environmental review and contract negotiations.

The Manitoba Hydro Project

At the request of our customers, Western has been involved in discussions and negotiations with the Provincial Government of Manitoba (Manitoba) for a possible long-term power supply arrangement from a proposed Canadian hydroelectric powerplant on the Nelson River. Based on our customers' letters of interest in such an arrangement, Western and Manitoba have signed a letter of intent which outlines the basic sales principles. These principles state that Manitoba will build and sell the entire output of a proposed 1,275-MW hydroelectric powerplant for 35 years at a negotiated percentage of the average cost of the next two coal-fired thermal powerplants to be built in the Missouri River area. The proposed powerplant in Manitoba is scheduled to be placed in service between 1995 and 1998. Before the final contractual arrangements can be executed, Manitoba and Western's customers must agree upon the detailed costs and purchase percentage of the proposed thermal alternative. Studies to identify the costs and needed transmission facilities south of the Canadian border are currently underway. Any needed facilities would be financed by Western's customers.

Kansas Transmission Study

Western is involved in planning and power marketing activities to provide service from existing resources to eligible preference power customers in Kansas. In cooperation with the Southwestern Power Administration (SWPA) and other interested utilities, the planning study has been expanded to investigate a resource integration program between Western and SWPA to take advantage of hydrodiversity between the different river basins.

System Resource Integration Study

Western is currently engaged in hydrological and transmission system studies to determine additional opportunities for marketing and operating the Federal hydropower resources. Using the combined hydrology of all of the river basins in Western's control area, Western is examining the potential for additional firm power, sharing capacity reserves among operating areas to assure adequate generating capacity when adverse water conditions occur in one of the basins, and identifying transmission bottlenecks. This study work is scheduled for completion in early FY 1987.

SYSTEM OPERATION AND MAINTENANCE

The total FY 1987 O&M program activity requirement is $86.2 million, including $85.9 million of budget authority and application of prior year balances of $0.3 million. Our FY 1987 appropriation request for system operation and maintenance of $85.9 million includes $3.5 million of permanent appropriation authority for the Boulder Canyon Project. The increase of $11.7 million in total program activity requirements over Western's FY 1986 request is attributable to the continuing shift of Western's administrative and general expenses from the construction activity to the O&M activity, price increases for goods and services, higher costs of maintaining a power system at an acceptable industry-wide level of reliability and safety, and replacement and addition of equipment and transmission lines.

Of the FY 1987 program total, $68.5 million or 79 percent is for regular transmission system operation and maintenance expenses. This includes classified and wage board employee salaries, travel and transportation, rents, communications, utilities, materials and supplies, data processing, and administrative and general expenses.

In addition, $16.1 million or 19 percent is requested for power system replacements and additions necessary to maintain and improve system reliability, stability, and operational efficiency. This includes the purchase of telemetering, supervisory control, microwave, radio and protective relaying equipment, circuit breakers and transformers; the replacement and disposal of equipment containing polychlorinated biphenyls; the inspection of wood poles and the replacement of wood-pole transmission structures that have exceeded their useful lives; and the replacement of the telephone and data systems at Western's Headquarters and the Montrose District Office.

Hoover Consolidation

The Hoover Power Plant Act of 1984 authorized the uprating program at the Hoover Power Plant and modified the provisions of the General Consolidated Power Marketing Criteria or Regulations for Boulder City Area Projects. In order to meet these criteria, the existing Hoover Switchyard facilities will be modified and/or removed where possible so that the Hoover Power Plant units will tie directly to Mead Substation. Mead Substation will then become the delivery point for Hoover power. Field data, design, and circuit breaker and transformer procurement will be initiated during FY 1987 for Mead Substation and for transmission line modifications.

Public participation continues in developing the general regulations for the charges for the sale of power from the Boulder Canyon Project.

Marketing Plan Status

Considerable progress was made in the development of several marketing plans during this past year. I am pleased to report that criteria for two major marketing efforts have recently become final, and allocations pursuant to a third marketing effort have also been completed.

Final marketing criteria have been completed for the Western Division of the Pick-Sloan Missouri Basin Program and the Fryingpan-Arkansas Project, as well as for the Colorado River Storage Project, which will be integrated with the Collbran and Rio Grande Projects.

Contingent capacity and associated energy available from the uprate of existing Boulder Canyon Project generating units has been allocated to the State of Arizona, the State of Nevada, and to nine cities in the State of California. The final allocation, published in the Federal Register on November 20, 1985, will serve as a basis for contract negotiations with allottees in the months to come.

Fuel Displacement Activity

Western's fuel displacement activity (previously called the Oil Conservation Program) resulted in the displacement of the equivalent of approximately 7,701,810 megawatthours of energy in 1985. This is an increase of over 500,000 equivalent barrels of oil compared to 1984. Through this program, Western sells energy to utilities which would otherwise generate with more expensive nonrenewable resources, such as coal or oil.

Conservation and Renewable Energy

Western's customer conservation and renewable energy (C&RE) program was amended in FY 1985 to comply with Title II of the Hoover Power Plant Act of 1984. This action placed increased emphasis on the responsibility of Western's long-term firm-power customers to develop and implement effective C&RE programs as a condition of the firm power sales contract. Conversely, the need for technical assistance by our customers has also risen and has placed a greater emphasis on Western's customer service function as it relates to the changing conservation and renewable energy technologies. The customers' needs are being served in the form of equipment loans, cost-shared developmental studies, direct technical assistance, technical workshops, and C&RE-related technical resource publications.

The total C&RE budget to administer the contractual provisions and facilitate the development of effective customer programs for FY 1987 remains at $3 million (including $1.6 million of new budget authority). Western's customer C&RE program is based upon a strategy of cost-effective energy conservation measures combined with the development of renewable energy resources where economically feasible.

Status of Water Conditions in Western's Marketing Area

Based on the February 1986 "Water Supply Outlook for the Western United States" published by the Departments of Agriculture and Commerce, major river basins in the Western United States should produce below-normal to slightly above-normal flows this spring. The above-normal February precipitation should substantially increase this outlook.

The current 1986 supply outlook is for above-normal runoff in California in the Sacramento, San Joaquin, and North Coastal (i.e., Trinity) River Basins. Although precipitation since October was below normal, recent storms have increased reservoir storage and runoff projections. The projected water conditions should result in above-normal energy output from the CVP hydropower facilities.

The Missouri River Basin can generally expect slightly below-normal inflows and normal releases during water year 1986. The North and South Platte River Basins are forecast to have above-normal runoff. The Yellowstone River Basin is forecast to have near normal runoff. The combined annual runoff for the Missouri River Basin is expected to be near the long-term normal runoff. Current mainstem Missouri River storage remains about 5 million acre-feet below the desirable carryover storage target at this time of the year.

The water supply outlook for the Colorado River Basin is for above-normal runoff for the fourth consecutive year. Reservoir storage remains high. The April to July inflow forecast for Lake Powell, made early in February, was 9.5 million acre-feet or 127 percent of the 20-year average inflow. Subsequent February precipitation was above normal and, as a result, Colorado River Storage Project revenues again should sufficiently exceed expenses to allow substantial returns to the U.S. Treasury to repay investments.

PURCHASE POWER AND WHEELING

The total FY 1987 purchase power and wheeling program request is $113.7 million, including $76.7 million of new budget authority and application of prior balances of $37 million. In addition, Western has other financing amounting to $91.2 million from net billing, bill crediting, and nonappropriation transfers. This request provides for the purchase and wheeling of power to meet existing contractual commitments and for Western's participation in the Fuel Displacement Activity.

The increase of $41.2 million in the total program request is primarily due to Western's purchase of additional power from Basin Electric Power Cooperative (Basin) in FY 1987 to help meet CVP power delivery obligations. This will be the first full year of implementing the contract between Western and Basin for delivery of 185 MW of power. Western will reduce purchases from the Bonneville Power Administration (BPA) in FY 1987 due to transmission limitations and BPA policy with regard to Northwest power sales. This will decrease nonappropriation transfers with BPA that have offset appropriation requirements in the past.

Bill Crediting

Western is implementing a bill crediting process that reduces the amount of appropriated funds needed to meet the CVP purchase power and wheeling requirements. Under contracts negotiated with several major CVP customers, Western will determine each month the amounts those customers will pay directly to Western's power suppliers. In return, Western will credit the customers' CVP power bills in an amount equal to the customers' payment to the suppliers. The amount which can be bill credited is limited to the amount of revenue which Western would otherwise receive from those customers and by the amount of the bills received from Western's power suppliers.

When the FY 1987 budget was prepared, we assumed bill crediting of $33 million in FY 1986 and $36 million in FY 1987. However, higher levels of bill crediting may be achievable, possibly as high as $50-60 million a year. Although annual appropriation requirements are reduced under this process, a corresponding portion of customer receipts that would normally flow to the U.S. Treasury as payment to the Government will be foregone since the customer will assume the Government's obligation to pay the supplier for a portion of the power sold.

POWER RATES, REVENUES, AND REPAYMENT

Status of Project Power Rate Increases

In order to maintain sound financial footing, Western, since its establishment in 1977, has implemented 14 rate adjustments which are subject to FERC review. Rate adjustment activity was recently initiated for the Collbran Project and the Colorado River Storage Project (transmission rate).

Based on preliminary study analysis, rate adjustments are expected to be initiated in the near future for the Colorado River Storage Project, the Fryingpan-Arkansas Project, the Rio Grande Project, the AC portion of the Pacific Northwest-Pacific Southwest Intertie Project in Arizona and Nevada, and the Washoe Project (Stampede Powerplant).

Rates for the Boulder Canyon, Central Arizona-Navajo, and Falcon-Amistad Projects are adjusted either annually or monthly in accordance with repayment formulas set by contract or regulations.

Power Revenue and Energy Sales

During FY 1985, Western marketed 47.6 billion kWh of available energy to wholesale power customers and received electric service revenues of $613.6 million. Our estimate for FY 1986 energy sales and revenues is 37.0 billion kWh and $571.9 million, respectively. For FY 1987, energy sales are estimated at 35.4 billion kWh and revenues are estimated at $589.2 million.

The change in energy sales from FY 1985 through FY 1987 is due to above-normal runoff in the Colorado River Basin in FY 1985, which resulted in greater nonfirm energy for sale in FY 1985 than initially projected. The FY 1986 estimated energy sales are based on normal river basin runoffs for the year.

Power Repayment

As of September 30, 1985, the investment to be repaid by Western's power system revenues totaled approximately $4.1 billion, of which $2.3 billion remains to be repaid. Cumulative power receipts total $6.3 billion and have been applied as follows: $2.2 billion for operation and maintenance and other expenses; $1.0 billion for purchase power and wheeling; $1.3 billion for interest; and $1.8 billion for repayment of investment in facilities and assistance to irrigation.

The following table summarizes Western's repayment status by project:

STATUS OF REPAYMENT AS OF SEPTEMBER 30, 1985[1]
(DOLLARS IN MILLIONS)

Project	Power [2] Investment	Power Receipts	Operating Expenses (O&M) and Other	Purchase Power	Interest	Repayment To Date	Unpaid Investment
Boulder Canyon	$ 177	$ 567	$ 291	$ 0	$ 150	$ 126	$ 51
Central Valley	691	1,339	287	679	159	214	477
Collbran	16	11	4	0	6	1	15
Colorado River Basin (Navajo)	244	573	440	0	53	80	164
Colorado River Storage [3]	862	1,136	259	241	232	404	458
Falcon-Amistad	44	24	7	0	11	6	38
Fryingpan-Arkansas	179	2	0	0	2	0	179
Parker-Davis	173	395	147	12	67	169	4
Pick-Sloan	1,675	2,175	769	97	549	760	915
Pacific Northwest-Pacific Southwest Intertie [4]	74	24	15	0	9	0	74
Rio Grande	13	36	19	5	12	0 [5]	13
WESTERN TOTAL	$ 4,148	$ 6,282	$ 2,238	$ 1,034	$ 1,250	$ 1,760	$ 2,388

---

[1] Cumulative data on an accrual basis of accounting and on the best information available at the time.

[2] Power investment to be repaid includes irrigation-assistance investment.

[3] Includes the Provo River Project.

[4] AC facilities only.

[5] Repaid to date is $242,000, which was rounded to zero.

Modified Repayment Practices

It is proposed that all PMAs will be defederalized, with the PMAs being transferred from Federal control by FY 1991. In the interim, the Administration proposed in FY 1987 to modify PMA capital investment repayment practices legislatively. These modifications require repayment of the unpaid balance of the original Federal investment at a level not less than would be required under a fixed, straight-line amortization schedule for each power investment financed by appropriations and placed in service. This requirement would not apply to irrigation investments. Repayments of principal, if necessary, can be deferred, subject to the same terms and conditions applicable to deferred interest payments (e.g., current interest rates are used because the deferral helps finance current operations). The impact of this repayment proposal is relatively modest compared to the proposal made in the budget request for FY 1986.

The following table is Western's current estimate of the increased revenue that will be generated in FY 1987-1991 as a result of the modified repayment practices.

IMPACTS OF MODIFIED REPAYMENT PRACTICES
(DOLLARS IN THOUSANDS)

	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991
Estimated revenues using existing method	$589,174	$584,824	$579,499	$559,029	$542,444
Estimated increase attributable to modifications					
Principal	8,109	10,717	12,966	19,497	21,842
Interest	-10,734	17,791	15,620	19,661	12,628
Principal plus interest	- 2,625	28,508	28,586	39,158	34,470
Estimated total revenues after modifications	$586,549	$613,332	$608,085	$598,187	$576,914

Defederalization

Although funds are included in the budget for operating Western in FY 1987, the Administration will actively seek to defederalize our utility system.

The Administration will pursue defederalization through an open and competitive process involving the Congress and interested groups. It will be guided by the following principles:

(1) seek a fair return to the Federal taxpayers from the defederalization of our assets; (2) recognize the benefits currently enjoyed by existing customers; (3) recognize and provide appropriate protections for the personnel benefits of Federal employees; and (4) encourage efficient use of the Western Area Power systems.

Before implementation of defederalization, the Administration will seek the views of, and promote interest among, concerned groups and individuals, including congressional delegations, State and local officials, current customers, the financial community, and public power and private sector energy interests.

This concludes my statement of Western's FY 1987 budget request and program status. I would be pleased to respond to any questions you may have.

Western
Area
Power
Administration

U.S. Department of Energy
P.O. Box 3402 Golden, CO 80401

January 1986

BIOGRAPHICAL SKETCH

WILLIAM H. CLAGETT
Western Area Power Administration

William H. Clagett was appointed Administrator of the Western Area Power Administration (WAPA) by Secretary of Energy John S. Herrington on March 19, 1985. Clagett was the Deputy Administrator with WAPA from 1978 to 1984.

WAPA markets and transmits federally produced power in a 15-state area.

Clagett graduated from Oregon State University in 1962 with a Bachelor of Science Degree in Business and Technology. He began his Federal career with the Bonneville Power Administration (BPA) in Portland, Oregon, in 1962. In 1966, he was assigned to the Area Office of BPA in Idaho Falls, Idaho, as an electrical engineer and was named Area Manager in 1970. The following year, he was appointed Assistant Administrator at BPA and assigned to the Washington, D.C. Office. He remained with BPA until transferring to WAPA.

In 1984, Clagett served as Acting Administrator for the Southwestern Power Administration headquartered in Tulsa, Oklahoma.

Clagett has served in various capacities on the Western Systems Coordinating Council, including the position of Chairman. He also serves on the Board of Trustees for the North American Electric Reliability Council.

Clagett and his wife, Brenda, have a son and daughter and reside in Littleton, Colorado.

# # #

Tuesday, March 18, 1986.

DOE: ATOMIC ENERGY DEFENSE ACTIVITIES

WITNESSES

ADMIRAL KINNAIRD R. McKEE, U.S. NAVY, DIRECTOR, NAVAL NUCLEAR PROPULSION PROGRAM

SYLVESTER J. FOLEY, JR., ASSISTANT SECRETARY FOR DEFENSE PROGRAMS

JOHN L. MEINHARDT, DEPUTY ASSISTANT SECRETARY FOR NUCLEAR MATERIALS

Mr. Bevill. Pursuant to the decision of the committee yesterday, these hearings will be closed. Only those who have clearance will remain in the room.

Admiral, do we have someone in your group to make certain that we have only cleared personnel here today?

Admiral McKee. Yes, sir, we have done that, and we are all set.

Mr. Bevill. Admiral McKee, we are always pleased to have your testimony and to hear you. You always present very interesting testimony, and we appreciate the good job you are doing. You may present your testimony as you wish.

Admiral McKee. All right, sir, with your permission, I would like to forego reading my statement, and get on with some specific things.

Mr. Bevill. That will be fine. Your entire statement will be made a part of the record. Secretary Meinhardt's statement will also be made a part of the record.

You may proceed as you wish.

OVERVIEW

Admiral McKee. Thank you, sir. I will give you a summary of where our program is at this time. I will give you an idea where the money is going.

Mr. Bevill. John Myers said it would be nice to know that.

Admiral McKee. This is an extract of my charter, which I am going to use as an index.

Safety of reactors is my primary responsibility. Inherent in that is control of radiation. My research and development work is significant, as is design, construction, inspection and testing, in particular with the new submarine coming along.

I will step my way through those items starting with the safety record. I show you this every year. It is particularly important to think about safety this year, because of the Challenger accident.

I don't know what is going to come out of all of that, but I feel like the Lord is tapping me on the shoulder, because nuclear technology has many of the same aspects involving acceptable risks.

Neither of us do things that are inherently safe, yet we both had enjoyed an unparalleled safety record up to the loss of Challenger.

SOVIET RECORD

Look at the the Soviet's record. Suppose I had to present that to you as my record this year? You have seen this before, but since the last time you saw it, there has been additional problems in the Soviet nuclear powered fleet.

If I had to present that to you as my record, I would probably be doing some thing else for a living shortly thereafter, but more important than that——

Mr. **Bevill**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Bevill**. [Deleted.]

Admiral **McKee**. [Deleted.]

PROGRAM STATISTICS

Let me review the program's statistics. 65 million miles steamed now, 66,000 operators trained, which is a fairly significant load. My program is responsible for 177 operating reactors, the largest program in the free world. Admiral Rickover set a solid base, and I am trying to maintain it.

The biggest vulnerability is the very thing that I have described, the safety record.

It looks too easy, so there are all kinds of pressures and questions. Why do you work so hard? Why are your standards so rigorous, and so forth?

I am responsible for 149 ships and eight prototypes operating and 28 more ships authorized.

It is interesting to note that the nuclear fleet has grown from 90 ships in 1970 up to 149 ships today. In that period, the average age of the ships has gone from 5 to 15 years. To put that in perspective, these ships were originally designed for a 20-year lifetime. Now I am asked to make them go for 30 years, but they were designed for 20 years. We have a large fleet approaching its original design limit. Let me give you an idea of the resource implications, which are important. If you put all the money in 1954 dollars to get them on the same scale, our budget profile since the beginning of the program looks relatively constant over all these years.

I can identify each spike in the line. Each of those spikes is when we went off to do something new, with the exception of one spike when the fiscal year was extended.

In that same time, our responsibilities have grown significantly, because the number of operating reactors keeps going up. What that means in dollar terms is the amount of money we have had to spend to preserve the operability of the fleet has grown with the fleet, and thus, the discretionary dollars we have has decreased significantly.

So, small increases have a lot of leverage as do small decreases, and we have to be very careful. To give you an idea of what it means overall, we are about 5 percent of the DOE budget.

We are a small part of the DOE budget, but a very highly leveraged part of the DOE budget. It is interesting to look at the Defense Department's overall budget breakdown. The entire allocation of funds to the submarine force is about 5 percent, and that includes the entire sea based deterrent. You get 40 percent of the missile coverage of the strategic deterrent force for about 2.5 percent of the national investment in defense. That is a pretty good bargain, even though the individual ships are expensive.

What is my job? My job in terms of dollars and cents is to protect that major investment. We have well over $100 billion of investment in these nuclear-powered ships.

I have to protect that investment because if I do something meatheaded in my program, we will change the fundamental structure of the Navy and the National defense status.

We also have to enhance that investment through research and development, procurement, and factoring in our operating experience.

I have to do a number of things in 1987. These are my customary divisions of effort. Operating reactor support is the business of factoring the technical experience that we have gained in all our plants back into what we are doing now, and also further enhancing the operation of the ones we have.

As I said before, we designed these ships to go for 20 years. We are being asked to take them to 30 years, and the surface ships as far as 45 years, a lot of fundamental research and development has to go into operating reactor support to be able to assure ourselves we can do that.

Reactor performance improvement has to do with getting more out of what we have, and working on new developments.

Let me give you an example of what we are trying to do. [Deleted.]

So the question is, what can we do in terms of performance improvement given our fleet experience and our ability to make component improvements. [Deleted.]

Material development and certification is an underlying effort that supports all of our work—old and new ships and so forth.

The other group is the specifics I will talk about, the fuel factory, servicing the prototypes and operating them safely, and the Water Cooled Breeder Program.

FUEL FACTORY

The new fuel factory is down at Savannah River. The Congress did a very good thing when you let us build this fuel factory, because if we didn't have this place coming on line right now, we would have found ourselves in some significant difficulty.

We only had a single source for our fuel, and that is a commercial plant in Erwin, Tennessee.

That place is having a tough time right now, because they have been on strike for about ten months, a long time. I don't see an end to that strike. They have been operating at reduced capacity for awhile, [deleted].

They also changed their position in the corporate world a few years ago. They used to be part of Getty Oil. When Texaco took over Getty, they got the fuel factory, which they really didn't want. They are looking for somebody to buy Nuclear Fuel Services.

Mr. **Bevill**. Maybe they can apply the $10 billion judgment.

Admiral **McKee**. It is not worth quite that much. They found one buyer who has since backed out.

The current fuel situation is a classic example of why we need two fuel sources. The new fuel factory will be starting to make fuel this year. Bringing the factory on line this next fiscal year is one of the reasons our uranium budget looks as high as it does. We need enough fuel to bring the new factory on line, and qualify it for full production while operating the other factory, [deleted] inventory for the next problem that comes along.

We didn't need as much fuel this year as we thought we needed, because the strike almost shut down Nuclear Fuel Services. They are running the factory with white-collar people right now.

PROTOTYPES

You recall I have eight prototype reactor plants that represent the first of a kind of various types of reactors. They continue to serve as R&D platforms and also as training facilities.

The eight prototypes are getting old. Two were built in the seventies, and the rest were built in the fifties and sixties. So they are getting old.

We went 10 years without having to do any serious work on them. We only had to refuel two of them. Now we have to service them all in a 10-year period. Those are the factors that affect what we have to do, and that is a big piece of our budget.

A significant portion of the increase in our operating expenses is due to servicing these prototypes. To give you an idea of the work involved, all you have to do is consider the number of major prototype refueling and overhaul jobs, and the many major maintenance periods. You can see our work is cut out for us.

It is a very significant effort on our part. You recall I described to you last time that we are going to take the S1W prototype out of service [deleted]. We looked at the cost of refurbishing it, and it came somewhere on the order of $400 million. Even then, it would still not have had the capacity that we need for modern work. So we decided to eventually shut it down and replace the last training capacity with a decommissioned submarine which we are calling a moored training ship. That work is underway.

We took a ship that had to be taken off the line, because of the SALT commitment. The submarine is in the Charleston Naval Shipyard where she was recently cut apart to remove the missile compartment.

She will be put back together again and turned into a training facility at a total cost of about $200 million, so that is a significant savings over the estimated S1W cost.

LIGHT WATER BREEDER REACTOR

The light water breeder work will finish in 1987. This will be the end of the Water Cooled Breeder program. To give you an idea of what that means in terms of money, the total amount of money that has been spent on this program is less than the cost of one year of development of the liquid metal breeder when that was going on. Really, it is the payoff on the investment, and this is the work that we have to do——

Preparation and shipment of spent fuel, and clean-up of facilities, and completion of the proof of breeding. We have to prove that this experiment worked.

Energy development in our country, as you know, suffers from the fact that nobody in the business is going to live 300 years, so we are very much focused on the near-term. But in the long-term, we are going to have to do something besides burn fossil fuel taken out of the ground. This technology gives us the ability to use the very considerable thorium reserves in this country without necessarily having to build new reactor plants. We could put the cores in existing reactor plants. There are several hundred years of electricity in this technology, if we elect to use it. So it is important to finish the job and make the technology available to industry so that it is available when nuclear power becomes stylish again and there is a need for a breeder.

SSN-21, "SEAWOLF"

The Advanced Fleet Reactor is our major Naval undertaking. We have to make a lot of improvements over current design capabilities to achieve our goals.

The Advanced Fleet Reactor is the system that will go into the new attack submarine. I have talked to you about this every year I have been here. The first year it was a gleam in my eye.

This year, it is a lot more than that. We are trying to build a new submarine, *Seawolf*, that will have performance improvements not achievable in a 688 class submarine. What you need to understand is that we can't achieve any of those goals with the possible exception of firepower, unless the work I do in the propulsion plant comes to fruition.

We cannot preserve the acoustic advantage, or get it to go faster or deeper without improving [deleted]. We have to make it more resilient than ever before to withstand battle damage. The payload is an aggregate of those things.

Several years ago, I told you the Russians are coming. That is what Admirals do when they come over to testify, they tell you the Russians are coming, but they really are. The Russians have done extraordinary things with their submarines over the last five years. They finally got where they have been trying to go for a long time.

That is their newest submarine, and that is some submarine. That boat in the low-speed range [deleted].

Remember the mythology—the Soviets always build small, fast, quick submarines, and we build big lumbering ones. Compare the two, that is a 688, and that is their first line boat.

They have learned that the laws of physics, and the principles of Naval architecture apply wherever you want to go. [Deleted.]

This is not a surprise to us. The amount of effort they have been putting into submarine development for a long, long time has finally begun to bear fruit. It is a good submarine, and I will show you what I mean.

This is the boat we want to build. As you can see, it is not quite as big as the Soviet boat, but it is bigger than a 688, but for some of the same reasons, this ship had to grow as theirs had to grow substantially.

My first submarine command was in 1956, called the X-1, a 35-ton Midget submarine. [Deleted.] That is a big submarine.

There is an interesting comparison. The Soviets have built a lot of new submarines, but look at the time lines.

We started building the Los Angeles back in the mid-sixties. I was a Lieutenant Commander in those days and I worked on it. We brought the 688 to sea in the mid-seventies. She performed well and she was fast. Just about the time we got her to sea, the Soviets started on this boat. We sat back and took about a 20-year hiatus in new designs. We began *Seawolf* a few years ago and hope to get her into the sea in the mid-1990s.

At a certain speed, a submarine makes a certain noise, and the faster it goes, the more noise it makes. [Deleted.] So it is a big challenge.

Today, the 688's are [deleted].

That is not so hot. The new design is intended to to be very quiet. The reason that is important is because of the progress the Soviets have made. [Deleted.]

[Deleted.] There are things we can do to the 688 which will improve that, but even then, there is a limit. My work on the Advanced Fleet Reactor has to do with achieving a very quiet plant.

688 CLASS IMPROVEMENTS

Mr. FAZIO. You are going to retrofit the 688s to make them quieter?

Admiral MCKEE. [Deleted.]

The improvements we are going for in the *Seawolf* submarine propulsion plant are quieting [deleted]. We want it more producible so it doesn't cost as much in a relative sense to build.

We have got to design a new reactor and a new main propulsion drive train.

This is perhaps more interesting. The results of our work have to make a substantial improvement compared to a 688 submarine. [Deleted.]

That lets us [deleted] in this submarine over the 688. That means it can carry better weapons, better sensors and more weapons, [deleted] and get where it is going faster, [deleted]. It will spend less time going and coming, and with a heavier weapons load, it can stay longer.

[Deleted.] With the weapons load it has, if it has an exciting couple of weeks, it will have to come back again. With the new submarine, we are trying to increase time on station, so more time can be spent where it counts and less time going and coming.

To do that, [deleted] requires us to do some things we've not done before. Places where noise really didn't matter before are making a great deal of difference now.

[Deleted]. What that has done is cause us to develop several test facilities.

TEST FACILITIES

At the Bettis Laboratory, I have a hot, quiet test facility, which will soon be operating with components for the new submarine.

[Deleted.]

We also need it to verify our shock test models. [Deleted.]

We will get just about the same kind of testing, and it is a very complicated program. We are well under way buying hardware.

The schedule is complicated, but it gives you an example of how things fit together. The prototype core has to be developed, components have to be tested, engineered, tested again, and finally run in the prototype plant. I could go over the schedule for each component, but I won't because I want to save your time.

It is a complicated, but achievable schedule that leads to delivery of the first ship in 1994. The other point is, this is not a paper effort. The submarine is proceeding apace, and I will show you some pictures from the whole submarine.

[Deleted.]

Mr. **Bevill**. [Deleted.]

Admiral **McKee**. [Deleted.]

I want to get across the point we are really building things. [Deleted.] So, the program is moving along on schedule and we expect to meet our cost goals, but it is a terribly demanding program.

The important thing to recognize is we have the momentum and we are getting things done in sequence at the most economical and effective rate, and we want to continue to do that.

FY 1987 BUDGET REQUEST

To do all of my work requires about a 14-percent increase in operating expenses over last year. Although I should tell you my total budget is only about a 5-percent increase over last year's initial appropriation. Virtually a level budget from last year adjusted for inflation, but the initial set of Gramm-Rudman reductions changed me from a 5-percent increase to an overall 10-percent increase.

Mr. Chairman, that is really all I came to say. I would be happy to answer questions.

[The statement of Admiral McKee is included at the end of the hearing record.]

FUTURE ADVANCES IN NUCLEAR PROPULSION

Mr. **Bevill**. Admiral, describe the advances you see necessary for the United States to maintain its nuclear strength compared to Russia?

Admiral **McKee**. We have to [Deleted]. We are never going to build as many submarines as the other guy has. People argue about how many we have versus the Soviet. It doesn't matter in a tactical sense.

We raise our young submarine officers with the understanding that if they go where they have been sent and they are not outnumbered when they get there, they are at the wrong place. They must expect to operate in that sort of environment, and that means they need to be able to hear the other guy from a farther distance, and run faster than he can at high speed.

Mr. **Bevill**. Can he do that now?

Admiral **McKee**. [Deleted.] If a war starts tomorrow, God forbid, we would do all right.

We have enough of the Los Angeles class submarines to handle the threat now, but the question is what happens in the next century? The Seawolf will not appear until 1994-1995, and then it will be awhile until we get into production, so this class will not be available in quantity until the 21st century. That is why they call her 21. The other aspect that is important to consider is that, the technology involved in achieving these goals, is also going to be critically important for the long-term invulnerability of the SSBN force, the Trident system.

That system is invulnerable now and will remain that way for the foreseeable future, but when Soviet submarines like the AKULA come to sea it makes the job a little bit harder. We will use some of what we learn from *Seawolf* to make sure the Tridents remain invulnerable well into the next century.

LOS ANGELES CLASS UPGRADES

Mr. **Bevill**. What are we doing to assure the capabilities of our submarine force stay ahead of the Soviets until the SSN-21 comes on line?

Admiral **McKee**. We have an SSN 688 improvement program, [deleted].

In the later boats of the class, we are putting vertical missile launchers in the nose, which gives us the ability to carry [deleted] more weapons. They will only handle Tomahawk, but it gives them the ability to carry more weapons. [Deleted.]

Mr. **Bevill**. When will that one be on line?

Admiral **McKee**. The first boat of the *Seawolf* classs? 1995. [Deleted.]

Mr. **Bevill**. John Myers and I heard Bill Anderson tell about going under the North Pole, Admiral. Quite a story. Very interesting.

Admiral **McKee**. That is right, [deleted].

Mr. **Myers**. Do they live up there or just exist up there?

Admiral **McKee**. They live up there, they love it as long as they don't have to get out much.

Mr. **Bevill**. What is the length of the boat?

Admiral **McKee**. The 688 is 360 feet. The difference in tonnage, I can tell you. The 688 is about 6900 tons, and the *Seawolf* is about 9200 tons.

Mr. **Myers**. How tall is the Washington Monument?

Admiral **McKee**. 555 feet. The Trident standing on end is about the same height as the Washington Monument.

Mr. **Bevill**. All right. The Chair recognizes Mr. Myers.

NUCLEAR POWERED FLEET

Mr. **Myers**. Well, thank you, Mr. Chairman.

Admiral, it is always exciting to see your submarines. We hope we never have to use them to defend ourselves, but we better have them if we ever do need them. I am never quite sure how many ships we have in our fleet, and how many are nuclear.

Your responsibility is the power plant for the nuclear Navy, whether it be surface or submarines?

Admiral McKee. Yes, sir.

Mr. Myers. How many ships do we have now?

Admiral McKee. We are about at the Secretary's goal of a 600-ship Navy. I think we get there in 1989. 149 are nuclear powered.

Mr. Bevill. 40 percent?

Admiral McKee. 40 percent of the combatant ships are nuclear powered. When you take the auxiliaries out, 40 percent of the combatant ships in the Navy.

Mr. Myers. 14 carriers?

Admiral McKee. Yes. Four nuclear powered today and three under construction.

Mr. Myers. Are we continuing construction of all three?

Admiral McKee. Yes, sir. They are all under construction. CVN-71, which is the *Roosevelt,* is getting ready for sea trials in the fall, and 72 and 73 are coming behind her at Newport News. CVN-72 is rising now in the dry dock. The 73 is still being built in sections off to one side.

The 72 is supposed to go into commission, when is it? Do you know, Tim?

Mr. Foster. About three and a half years.

Admiral McKee. Probably three years beyond the 71.

Mr. Myers. You have funds in your present request for the power plants?

Admiral McKee. No, sir, that is all done. The Navy fully funds ships in the year of authorization. The last two CVN-72 and 73 were a 1983 authorization. The CVN-71 was a 1980 authorization.

Mr. Myers. They are all funded then and on schedule, then?

Admiral McKee. Yes, sir, the ships are reasonably on schedule.

Mr. Myers. Are we going to build any conventional diesel power surface ships in the future?

Admiral McKee. The whole DDG-51 class is, the new class of destroyers is oil fueled. The Aegis cruisers are also.

We are not building any nuclear cruisers or destroyers. We have nine, but we have never built beyond that.

COMPARISON OF U.S. AND SOVIET SUBMARINES

Mr. Myers. What are the capabilities of the Soviet submarine on line now?

Admiral McKee. It is operating now, sir.

Mr. Myers. What can it do that the 688 cannot do?

Admiral McKee. [Deleted.]

Mr. Myers. Isn't there some tradeoff as far as maneuverability and detectability is concerned.

Wouldn't it be easier to detect that huge mass than the smaller one?

Admiral McKee. You have to make the ship bigger to make it less detectable, because the sound isolation techniques we have to use require a lot of space.

[Deleted.]

Mr. **Myers**. I believe you said, that the improvements to the 688 were still in research, is that right?

Admiral **McKee**. No, sir, we have got the—some of those things I showed you pictures of are part of the improved the 688's [deleted].

The things we are doing now are to validate the experiments. There is money in the budget to make all of these improvements over about a 10-year period.

Mr. **Myers**. It would appear that the larger versions would be able to carry more ordnance?

Admiral **McKee**. This *Seawolf* will carry [deleted]. I would suspect the *Akula* also carries a bigger weapons load than earlier Soviet submarines.

Mr. **Myers**. Sonar is all sound, no radar detection?

Admiral **McKee**. Yes, sir, all acoustic, active and passive acoustic systems. The passive ones use the noise the target generates. The active systems are like radar, they send out an active signal.

SUBMARINE DESIGN

Mr. **Myers**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Myers**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Myers**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Myers**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Myers**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Myers**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Myers**. Corrosion, I suppose, too?

Admiral **McKee**. That is right. Depends on how you engineer it.

Mr. **Myers**. My last question is, there are those who suggest that the larger the ship, the less effective, [deleted] but is there a place where we reach a point of diminishing return? Maybe we are building them too large?

Admiral **McKee**. You can't hit and run if it isn't big enough to be quiet. You can get hit and sink, but not hit and run.

Submarine warfare is guerrilla warfare. We have had stealth for years. If we don't have the stealth, we can't hit and run. To have the stealth requires size, so a number of small, noisy submarines would be pesky, but it really wouldn't be much of a threat to this kind of boat. In fact, it would be a piece of cake for the 688 to deal with.

We have to build submarines that individually are adequately capable. They will work together, and with other forces, but they have to be individually capable, because what you buy with submarines is leverage.

One submarine in an ocean area will change the entire military balance and profoundly affect the way people plan their Naval operation.

Last year, I used the Falklands campaign as an example, one British attack submarine sank one Argentine cruiser. The Argentinians don't even know if he stayed there or not, but the Argentinian Navy never again crossed the 12-mile limit.

You want to be able to cash in on that, and that means a submarine has to be good enough to operate where it is heavily outnumbered.

Is there a size where it gets too big? The *Seawolf* will be big enough to do its job. I would not build a bigger attack submarine than that.

Mr. **Myers**. Your predecessor said that about the 688, too.

Admiral **McKee**. Yes, based on the technology of the 60's, but there are limitations in the 688. We have got to take those into account.

Mr. **Bevill**. The Chair recognizes Mrs. Boggs.

LOS ANGELES CLASS IMPROVEMENTS

Mrs. **Boggs**. Are we retrofitting this boat [deleted].

Admiral **McKee**. [Deleted.]

Mrs. **Boggs**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mrs. **Boggs**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mrs. **Boggs**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mrs. **Boggs**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mrs. **Boggs**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mrs. **Boggs**. [Deleted.]

Admiral **McKee**. [Deleted.]

SECURITY CONCERNS

Mrs. **Boggs**. Have any of our submarine plans been adversely impacted by security leaks?

Admiral **McKee**. [Deleted.]

At the same time, we went through a period back in the seventies when the rules we have for exporting potentially useful defense technology were not followed very well. If you remember how it works. Someone builds something and wants to get an export license, to do so they apply to the Department of Commerce who looks at it. If it looks like it has any military application, they have to get the Department of Defense's concurrence.

A lot of electronic test equipment slipped through without anybody asking the DOD for several years. It is my belief that had a lot to do with [deleted].

It has affected us, no question about it.

Mrs. **Boggs**. Thank you very much.

Mr. **Bevill**. The Chair recognizes Mrs. Smith.

SOVIET SUBMARINE ADVANCES

Mrs. **Smith**. Welcome, Admiral McKee. I learn more from you in the short time that you are here than from anyone else.

I am aware that the Soviets have come up with several new designs in a relatively short time. Are each of these a significant improvement?

Admiral McKee. No, ma'am, they really aren't. [Deleted.]

They build submarines instead of drawing things on paper like we do. They put it to sea and have been running it. We have not seen a substantial improvement in [deleted].

CHALLENGER ACCIDENT

Mrs. Smith. Do you see any implications for your program in the Challenger accident?

Admiral McKee. Yes, ma'am. I think it is a state of mind. That space shuttle program has been very successful with a perfect safety record in a high-tech environment, and a lot of operational pressure. The same way we live.

If some of the indicators I read about in the paper are true, that says that their attention to detail may not have been what it should have been. The question for me is, in my program, which is much the same, are we as good as we think we are. We are taking a good, hard look at that.

CIVIL SERVICE CHANGES

Mrs. Smith. What impact do you see that the proposed Civil Service changes are having on your program?

Admiral McKee. Devastating in the long term. I have about 140 civilian engineers. My senior people have anywhere from 20 to 30 years experience in the program. They grew up in Naval Reactors. We have never taken anybody from other programs. We always bring them in as young engineers and raised them in our technical disciplines. They all come in as new naval officers, and I interview and pick them.

At the point where they finish their military obligation, they have to decide whether to stay at Naval Reactors. If they stay, they have to decide whether to become civil servants or to stay in the Navy.

The first indicator that things have changed is that most of the few I can get to stay remain in the Navy and do not go into civil service. There was a significant advantage to make the transition from being a Lieutenant in the Navy up to a GM-13 in the past, that was a big deal, but not anymore.

I have bright, young men who have grown up in Naval Reactors. My Chief Reactor Designer, David Pye, is about 44; and Mark Forsell is in his early 50s. He is a naval architect and principal designer of propulsion plants. Bill Humphrey, who is 65, has been with this program since the very early days. He has been in charge of refueling many of our reactors. The most difficult and potentially dangerous thing we do is refuel; he has done all of that. Bill has decided to retire, because the potential changes in the taxation affects his retirement.

People like David Pye and Mark Forsell who signed on to do this very important work live with the pay cap—the same thing you have to live with. They made a conscious decision to do that because they knew the work is important, and because they get a lot of individual satisfaction. But we don't pay them much, compared to the industrial sector. They stay at Naval Reactors because they know the ground rules under which they signed on, a set retirement age, certain benefits, etc.

When you start fooling with changing the retirement age, you are going to force Mark Forsell to retire. He is irreplacable, but you are going to force him to retire or he will be faced with an illogical financial situation.

It is just wrong to do that. But worse, is the uncertainty that all of this creates. The general notion that all civil servants are just pigs at the public trough is not helpful to me in this program.

I cannot guarantee the safety of reactors if I can't keep those kinds of people in my program. This meddling with the Civil Service is creating a bad situation.

Mrs. SMITH. In this environment, are you still able to recruit top-quality people?

Admiral McKEE. Yes, ma'am, but it is harder to keep them. One of the pieces of mythology around town is that we lost a lot of people to the commercial nuclear power industry when it was growing. Much of the original expertise did come out of our program. Today people assume that I do not have any trouble anymore, because the commercial nuclear industry is not having a good time of it now.

The fact of the matter is, we take bright, young officers, and give them extraordinary responsibility, in a very disciplined environment. They grow dramatically in a very short period of time. This makes them very marketable. If they want to work for AT&T or anyone else you want to talk about, they are a very marketable commodity. We continue to get them, but there is a widening retention gap in the technical side. I am going to be left with a lot of bright young guys at one end who see this as a way to get a start and then leave, and old folks like me at the other end.

There is not a nice even transition from the young guys to the old folks. Instead, there will be a big gap. At the rate things are going there could be a point where I have to stand up and say I can't be responsible for the reactors and their safety.

Mr. FAZIO. If they had you selling SDI, I might even buy it.

Admiral McKEE. SDI is busy stealing my people.

Mr. FAZIO. They are busy confusing my brain, too, with the kind of rhethoric they use compared to the common sense approach you take.

I wish you would put in the record an answer to Mrs. Smith's question with some additional depth about the impact on your people. Respond in terms of the tax bill and the retirement reforms, both. I appreciate it very much. Mr. Myers can use it on his other committee, and others of us can, too.

Most of the questions have been asked, but I wanted to clarify a few things for my own benefit.

[The information follows:]

PERSONNEL IMPACT OF TAX BILL AND RETIREMENT REFORM

The success of the Naval Nuclear Propulsion Program has been due in large measure to our ability to attract and retain intelligent, hardworking and dedicated people. With cradle-to-grave responsibility for all aspects of naval nuclear propulsion—from research and development through design, manufacture, installation, operation, maintenance, and eventual disposal—the Program offers an opportunity for people to do important and challenging work in an environment conducive to excellence.

The entire program is run with a small headquarters staff of about 400 employees which includes civilian engineers and engineers who are naval officers. My top technical representatives at the shipyards are also civilians.

The average civilian engineer experience is ten years with most of the senior personnel who report directly to me in the twenty-to-thirty year category. We bring in only recent college graduates as naval officers, train them in-house, give them lots of responsibility, and they thrive on it. Many have stayed after they leave Navy service and have made this their life's work. With knowledge and experience accumulated over decades of work, they are top people in their field.

The civil servants I have working for me aren't underworked, incompetent or overpaid. My people routinely work long days and weekends without extra pay. Many forfeit large balances of unused leave each year. They routinely supervise the work of contractor personnel who get far higher salaries for jobs with far less responsibility and a much narrower scope.

Most have grown accustomed to the pay disparity, but pay freezes, arbitrary pay caps, and the recurrent threat of lost retirement privileges introduce uncertainties that have become a sore point. This is aggravated by a sense that their efforts are largely unappreciated. Civil servants as a group have had to bear the brunt of public criticism of Government—and some public officials and members of Congress have encouraged this.

Public service can be a challenging vocation—generally the jobs are broader in scope and have greater responsibility then those in other sectors of the economy. This is a substantial bargaining chip in keeping the people we need, particularly when the work is seen to contribute so much to our defense posture. But good attitudes and hard work are difficult to inspire if the employer denigrates the employees or reneges on prior agreements. Increasingly, those who were committed to a career in Government service are questioning whether they made the right decision—and this concern ripples down to top flight, young people who are seriously considering a career in public service.

I don't mean to suggest that the system is unchangeable. But changes should be prospective and handled positively, with a view toward the effect the changes might have on our ability to get and keep good people. For example, why not use bonuses to entice selected Government employees to defer retirement rather than extending the retirement age? The cost of a salary plus bonus would be substantially less than a pension and the cost of a replacement—and there would be less risk of alienating the employees.

We also need to avoid actions that would aggravate our problems. In the current climate, opening the door to early retirements to reduce the payroll and freezing obtaining replacements for five years, as suggested in a bill now before Congress, would be devastating. It would result in a mass exodus of some of the best people in Government.

In short, we must ensure that short term considerations don't lead to actions that will jeopardize our ability to attract and retain good people. I can't run my program without them.

"LOS ANGELES" CLASS CAPABILITIES

Admiral McKee. [Deleted.]

Mr. Fazio. [Deleted.]

Admiral McKee. [Deleted.]

Mr. Fazio. [Deleted.]

Admiral McKee. [Deleted.]

Mr. Fazio. [Deleted.]

Admiral McKee. [Deleted.]

Mr. Fazio. [Deleted.]

Admiral McKee. Yes, sir.

Mr. Fazio. [Deleted.]

Admiral McKee. [Deleted.]

Mr. Fazio. [Deleted.]

Admiral McKee. [Deleted.]

Mr. **Fazio**. [Deleted.]

Admiral **McKee**. [Deleted.]

Mr. **Fazio**. I wasn't in the retrofit area. Are we going to do all 688s, and 637s?

Admiral **McKee**. [Deleted.] It is a function of resources, how much money have we got.

Mr. **Fazio**. Don't you think that is a pretty good investment?

Admiral **McKee**. I think so, sir.

Mr. **Fazio**. Are we having trouble getting that from DOD?

Admiral **McKee**. Let me give that to you for the record.

[The information follows:]

[Deleted.]

Mr. **Fazio**. I wondered what the total cost would be. That is a very cost-efficient thing to do. When will the last 688 go out of service?

Admiral **McKee**. We still got them in the building program up through the mid-nineties. With a lifespand of about 30 years they will be around for a long time. We would be foolish not to do everything we can to get everything we can out of that boat.

[Deleted.]

Mr. **Fazio**. [Deleted.]

Admiral **McKee**. The last 637 was put in commisson in the mid-seventies.

Mr. **Fazio**. You would argue that all of them should be retrofitted, at least most of the 637s, and all of the 688s?

Admiral **McKee**. All of the 688s, and look carefully at the 637s.

Mr. **Fazio**. Will this be done when we put cruise missile capability on them?

Admiral **McKee**. Many ships have it now.

Mr. **Fazio**. They are being done periodically?

Admiral **McKee**. That is being done to everybody. The Soviets have to look at every submarine as a potential cruise missile carrier.

Mr. **Fazio**. They are capable of carrying both?

Admiral **McKee**. Yes, sir.

Mr. **Fazio**. There is some concern about the cruise missile.

Admiral **McKee**. You can't tell whether a particular missile has a nuclear or conventional warhead unless you read the inscription.

PUBLIC VS. PRIVATE SHIPYARD WORK

Mr. **Fazio**. Is there a plan to go to six or four naval shipyards?

Admiral **McKee**. I hope not.

Mr. **Fazio**. Don't you get the impression that there is increasing pressure on the public yards?

Admiral **McKee**. There is a lot of pressure on the public yards to do better. Whether there is a hidden agenda or not, I wouldn't want to speculate.

I have been putting pressure on the public yards to do better for a long time. They are doing pretty well. They are doing as well as the commercial yards in my business.

Mr. **Fazio**. As well or better?

Admiral **McKee**. Yes, sir.

Mr. FAZIO. Could you put something in the record to document that? I would appreciate it. I get the feeling they are not doing well enough to satisfy some people.

Admiral MCKEE. It is whether your glass is half empty or half full.

[The information follows:]

PUBLIC VERSUS PRIVATE SHIPYARD WORK

The only comparable nuclear ship work being performed by both private and Navy yards are overhauls of Poseidon SSBN's. Newport News is the only private shipyard performing these overhauls. Two public yards, Charleston Naval Shipyard and Portsmouth Naval Shipyard, overhaul these ships.

The four most recently completed SSBN overhauls are the USS *George Washington Carver* (SSBN656), USS *Francis Scott Key* (SSBN657), USS *Mariano G. Vallejo* (SSBN658), and USS *Will Rogers* (SSBN659). These four ships are the same class (SSBN640) and have essentially identical work packages. The amount of modernization, i.e. alterations, was less than 10% of the total work package and essentially the same in all four ships. All four ships started overhaul within one year of each other (from November 1982 to October 1983). All four ships were about the same age at start of overhaul (varied from 16 years, 1 month to 16 years, 6 months). All four ships had operated about the same time since last overhaul (minimum of 9 years, 1 month for SSBN658 to maximum of 9 years, 9 months for SSBN657). All four ships had an overhaul repair package that was structured to allow operation for twelve years after overhaul. The actual final cost to the customer for all three ships overhauled at Newport News (SSBN656, SSBN657, and SSBN659) exceeded the cost to the customer of the ship overhauled at Charleston (SSBN658).

A summary of these costs follows:

[Dollars in millions]

Ship	Shipyard	Fiscal year	Cost	Fiscal year 1985 constant	Duration (months)
Carver (SSBN656)	NNEWS	1983	$143.2	$154.4	31.5
Vallejo (SSBN658)	CHASN	1983	138.3	149.2	18.2
Key (SSBN657)	NNEWS	1983	144.2	155.5	30.8
Rogers (SSBN659)	NNEWS	1984	168.0	174.6	28.0

The cost differential between Newport News and the public yards is even greater for the SSBN's that are currently in overhaul. Each Newport News ship (SSBN628 and SSBN629) is currently estimated to cost at least $12 million more than any comparable SSBN in overhaul at a public yard (SSBN 631 at Portsmouth, SSBN's 630 and 634 at Charleston).

Mr. FAZIO. I see basic harassment, not just in terms of people problems, but the shift of workload to private facilities. This is a result of decisions that are made to allocate resources inadequately to the public yards.

Admiral MCKEE. So far, we are involved in trying to compete a private yard, and a public yard for a submarine overhaul. You will be interested in the outcome of that one.

I can't tell you yet.

Mr. FAZIO. Would you let us have that even if it doesn't make the record?

"RED OCTOBER"

How credible is the *Red October?*

Admiral McKEE. Pretty good book. We can't talk much about what we do. When people get excited about the book, we are pleased.

The last time I took a Senator out to ride a submarine, I carried my big book of things like Admirals always do to go over with him. Instead he said, "I don't want to see any of that stuff, I want to read Red October."

He was a lot more understanding from having read that than from listening to my stuff. The book is not incredible.

Mr. FAZIO. Are there things in it you would particularly like to debunk because you think they are off the mark by a significant degree?

Admiral McKEE. No, sir.

Mr. BEVILL. Mr. Rudd?

Mr. RUDD. I apologize for not being here earlier.

Is that model you have before us the *Red October?*

Admiral McKEE. *Red October* is two and a half times that big. *Red October* is 28,000 tons. This boat is about 10,000. That is the newest Soviet attack submarine.

Mr. RUDD. There is a *Red October* that size?

Admiral McKEE. Yes, sir.

NEW SOVIET SUBMARINE

Mr. RUDD. [Deleted.]

Admiral McKEE. [Deleted.]

Mr. RUDD. What are those marks there?

Admiral McKEE. [Deleted.]

Mr. RUDD. [Deleted.]

Admiral McKEE. [Deleted.]

Mr. RUDD. [Deleted.]

Admiral McKEE. [Deleted.]

PERSONNEL RETENTION

Mr. RUDD. I only have two questions, Admiral.

Thank you for the good work that you do and for the fine technicians and other experts in this technology that you train. I know you lose a lot of your people to the private sector. How are you handling that, more training or do you have other inducements available to keep them on board?

Admiral McKEE. For the men that operate the ships, Congress has given us bonuses and a variety of attractive compensation that has stemmed the tide of departures. Our retention is up to almost 50 percent now, which is good.

The goal is 55 percent in the middle ranks. You have given us the tools to keep the men that run these ships, but not the people that make sure the thing is built right.

We talked about the Civil Service concerns that I have before you came in, and that is a matter of concern. I have lost many of the younger professional people. Like Congressmen, my older people are remaining despite the pay cap because they are committed to what they do, but there is a limit to how far you can go with that.

SECURITY

Mr. Rudd. One concern that I have, is that our intelligence-gathering ability is not exactly what it should be. I am concerned about the rash of spies that have arisen here recently, and the espionage network that has been going on for a long time.

The Soviets know our system, and they are free to go and develop sources wherever they want and however they want. In this sensitive, under-sea warfare, I know you must be alarmed at what has happened.

Are we taking additional steps to prevent any future problems? Most will depend on our own personnel policies, how strict we are, and how often we look at every individual who has a top clearance. We have to keep some kind of tabs on this.

Are you alert to this?

Admiral McKee. We have always been terribly sensitive to the issue you raise. Admiral Rickover was right from the very beginning. As you know, we have legislation that enables us to protect even our unclassified but militarily sensitive nuclear propulsion information. Over the years, it had become not very stylish to keep secrets, and a lot of pressure developed to force the release of data. The Freedom of Information Act is a good example.

Reacting literally to the Freedom of Information Act requirements, you would look at each piece of information and say, well, that little piece is unclassified, let it out, but the aggregate of little unclassified pieces could make a dramatic classified story. The issue is that the vehicle is there to cause the release of data.

We spend extraordinary amounts of time dealing with Freedom of Information Act requests, including ones from foreign countries. Under our law, I have to respond to a professor in New Zealand who wants information from me. That is going too far in my opinion.

There is——

Mr. Rudd. Have you considered requesting legislation to permit that?

Admiral McKee. We have tried that periodically, and it has been less than successful. We have been bringing this up for the last two, three years, and Admiral Rickover addressed this issue before me. It goes against the grain to suggest restrictions. Also there is a problem with it. You can't willy-nilly close off access to data, but right now I think access has gone too far.

As for the illegal ways that people can get access to data. I am delighted that the system is finally tightening up on that kind of thing.

Mr. Rudd. The real key to this is in personnel policies. If we had taken a little extra care somewhere along the way, it wouldn't have happened.

Are you looking at that?

Admiral McKee. I think so. I think everybody has gone back and looked at the whole question of who has access to what and under what circumstances.

Mr. Rudd. Had we been a little more careful along the way, this might not have happened.

Are you going back and having a look at this? I don't want to know of any of your personnel policies or confidential matters.

Admiral McKEE. More than just personnel policies, but as in any case like this—we mentioned the Walker case earlier on—you can look back at the whole range of events during that period of time which affected the way the Navy operated.

You can say, wait, there were some indicators there, and I didn't pay any attention to them.

We saw a change in the pattern of the Soviet activity. We tried to figure out why and concluded that it was a happy accident or unhappy accident, however you want to view it. In hindsight, there was more to that than everybody gave credit for.

We have to be a lot more suspicious, more skeptical and learn to think in perhaps more devious terms, particularly in an operational sense.

Mr. RUDD. You got to trust the people that work for you?

Admiral McKEE. Absolutely. You can't take one of these ships to sea with somebody you don't trust.

Mr. RUDD. By the same token, supervisors, commanding officers, people like that, they are going to have to take a look at personnel files, or they will be in trouble.

Admiral McKEE. You have to watch for the indicators, or something that looks like it has changed. In the press of events, everybody is busy, it is easy to say, well, that looks different, I will think about that tomorrow.

Mr. RUDD. We must see if we can take a deeper look at that.

Admiral McKEE. I think we are doing that, sir.

Mr. RUDD. I would hope so.

Mr. BEVILL. The Chair recognizes Mr. Watkins.

Mr. WATKINS. Mr. Chairman, I have no questions.

NUCLEAR MATERIALS PROGRAM

Mr. BEVILL. Admiral, we appreciate the fine work you have been doing. We are going to take two minutes here for us to change, and then we will be ready to hear from Secretary Meinhardt. We will be glad to hear your summary. You may submit your entire statement for the record.

Mr. FAZIO [presiding]. Please proceed, Mr. Meinhardt.

Mr. MEINHARDT. I think following Admiral McKee is a very difficult challenge because of his exciting program.

[Slide follows:]

DEPARTMENT OF ENERGY
DEFENSE PROGRAMS

FY 1987 BUDGET REQUEST
(DOLLARS IN MILLIONS)

PROGRAM COMPONENT	FY 1986 APPROP.	FY 1986 ADJUST. APPROP.	FY 1987 AUTH.	FY 1987 APPROP.
TOTAL/WPNS ACTIVITIES	$4333	$4111	$4566	$4664
MATERIALS PRODUCTION	1863	1768	2048	2066
DEF WASTE/BYPROD MGT	656	619	689	704
VERIFICATION & CONTROL	97	94	102	102
NUCLEAR S&S	59	57	66	67
SECURITY INVESTIGATIONS	33	32	33	33
PRIOR YEAR ADJUSTMENTS		7		
GRAND TOTAL/DP	$7041	$6688	$7504	$7636

56(1)

FY 1987 BUDGET REQUEST

Admiral Foley used this chart, the total request for Defense Programs. The part I will address is Materials Production and Defense Waste, which represents about a third of the total Defense Programs budget request.

Our goal is a very simple one, and that is to produce the materials necessary to meet defense requirements and effectively manage the waste. That objective will be achieved when the sufficient inventory of materials has been built up to satisfy weapons productions demands, as well as reach the point where we are no longer accumulating an inventory of wastes for lack of an adequate disposal system.

[Slide follows]:

DEFENSE PROGRAMS
NUCLEAR MATERIALS

FY 1987 BUDGET REQUEST
(DOLLARS IN MILLIONS)

	FY 1986		FY 1987	
	APPROP.	ADJUST. APPROP.	AUTH.	APPROP.
MATERIALS PRODUCTION	$1,862.3	$1,768.1	$2,047.9	$2,066.1
DEFENSE WASTE AND BYPRODUCTS MANAGEMENT	655.9	618.4	689.1	704.4
TOTAL	$2,518.2	$2,386.5	$2,737.0	$2,770.5

56(2)

The request breaks down as follows, and I will spend just a moment talking about the 1986 adjusted appropriation, which reflects Gramm-Rudman-Hollings implications on our program.

We took a 5-percent reduction, as did everyone else within Defense Programs. Our request for 1987 is about $384 million above that 1986 adjusted program.

[Slide follows:]

[Deleted.]

MATERIALS PRODUCTION SUPPLY DEMAND

The reason we are in the business is to produce the materials to meet production requirements. This chart represents the supply and demand case for plutonium equivalent. I would like to focus on this 6-year approval period of the directive years of the stockpile.

During that period there will be a plutonium equivalent demand of about [deleted] required to support the program. We recover materials as it comes back from the stockpile, which helps us meet that requirement, but basically what we are looking at here in terms of new production, is about [deleted] of material including [deleted] equivalent for tritium decay and losses.

This committee has supported in the past the operation of the four reactors at Savannah River, and the reactor at Richland. When we have all five of those reactors operating to their maximum potential, we are capable of producing about [deleted] of plutonium equivalent per year included blending.

If you look at this requirement, then, through this directive planning period, six years, we only have a little bit of a margin at the end of that period. Because of the Gramm-Rudman-Hollings reductions in the weapons production program, the near-term demand has fallen off, and indeed, we will for a short time period, by the end of 1988, [deleted]. But at the end of this approval period, you see here the demand line, this blue line is now very close to the maximum amount of material we can produce, [deleted].

During the planning period, because the weapons production program will try to achieve what was lost because of Gramm-Rudman-Hollings, the demands will be higher in this time period, and we will indeed be very, very close to the demand line at this point.

Demand decreases during the mid 1990s. We are also making assumptions about scrap recovery. [Deleted.]

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

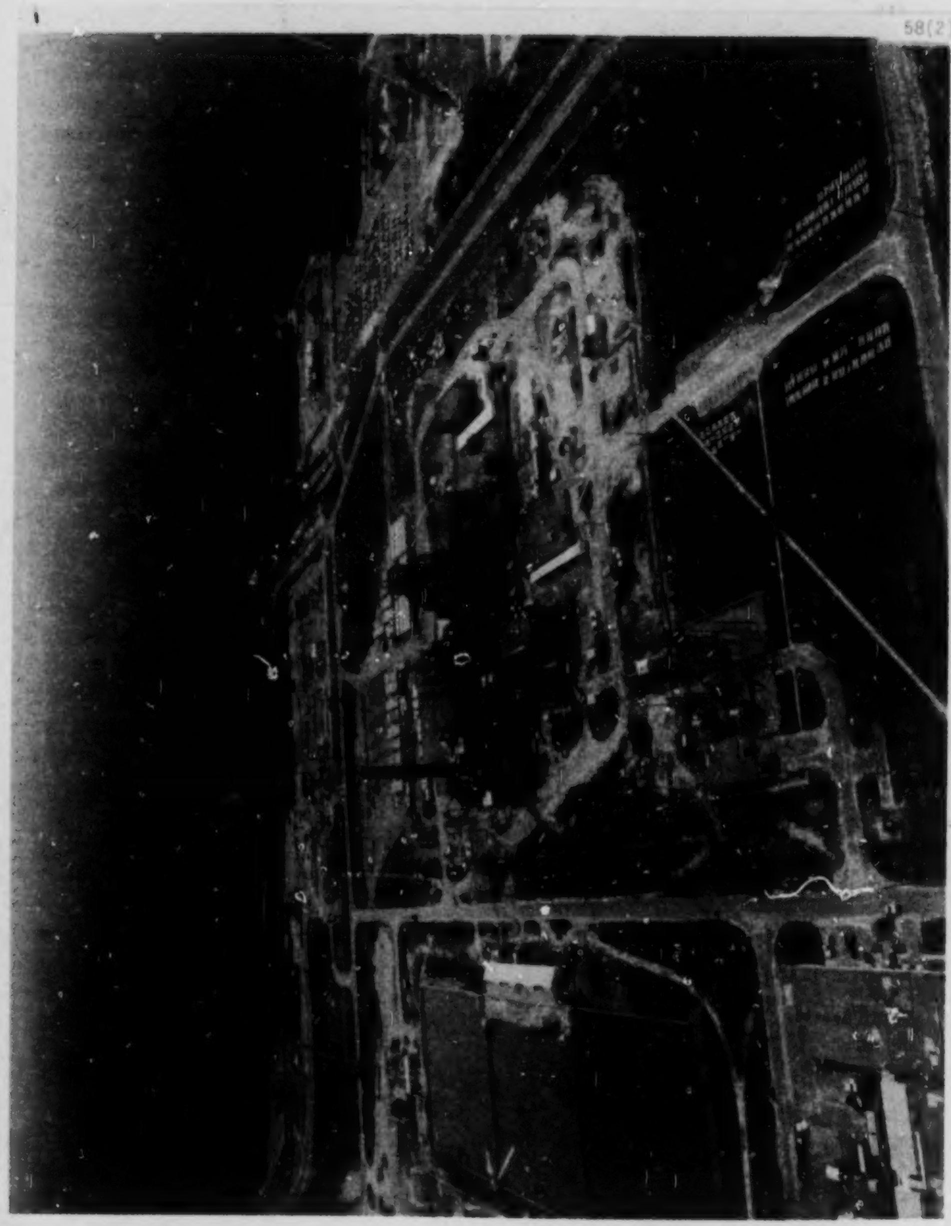
FY 1987 BUDGET REQUEST
HIGHLIGHTS

- CONTINUES CURRENT BASE PRODUCTION ACTIVITIES
- SUPPORTS PRODUCTION INITIATIVES BEGUN IN PREVIOUS YEARS
  - FUNDS PRODUCTIVITY RETENTION PROGRAM
  - FUNDS FACILITY RESTORATION AND IDAHO RESTORATION PROGRAMS
  - CONTINUES SPECIAL ISOTOPE SEPARATION DEVELOPMENT PROGRAM
  - CONTINUES REACTOR PRODUCTION ASSURANCE ACTIVITIES
- FUNDS URANIUM ENRICHING SERVICES TO MEET MATERIALS PRODUCTION AND NAVAL REACTORS REQUIREMENTS
- FUNDS SECURITY AND ENVIRONMENTAL NEEDS

This particular budget year supports that stockpile case. It also supports the production initiatives that this committee has supported in prior years, funds uranium to run Admiral McKee's reactors, and also is consistent with the security and safeguards needs of the Department, and generally of the complex.

[Slide follows:]

58(2)



REACTOR

One major accomplishment we had in 1986, one which we can all be justifiably proud of, is the restart of L Reactor, which had been out of operation for 17 years. Bringing it back on line was delayed a couple of years, but this particular reactor went critical on October 31 of last year.

[Slide follows:]

58(3)

In order to operate this reactor, however, we had to go through the process of creating a coolant lake for thermal mitigation purposes. This is a picture of that lake. The dam on the right is some 100 feet high, and the lake itself is about 1,000 acres. I would also like to mention that that 1,000-acre lake was required to be built to protect 300 acres of the swamp at Savannah River.

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET REQUEST
CHANGES FROM
FY 1986 APPROPRIATION
(DOLLARS IN MILLIONS)

FY 1986 APPROPRIATION (ADJUSTED)	$1,768.1
• ESCALATION	+ 79.0
• FY 1986 BASE PROGRAM CONTINUATION INCLUDING REACTOR OPERATIONS, PROCESSING, SUPPORT FACILITIES, SAFETY, ETC.	+ 98.5
• ENVIRONMENTAL	+ 16.5
• SECURITY	+ 20.1
• PRODUCTIVITY RETENTION AND RESTORATION	+ 43.3
• NUCLEAR MATERIAL PRODUCTION INITIATIVES INCLUDING: — PROCESS FACILITY MODIFICATIONS — SPECIAL ISOTOPE SEPARATION	+ 19.2
• NAVAL REACTORS URANIUM REQUIREMENTS	+ 21.4
FY 1987 REQUEST	$2,066.1

CHANGES FROM FY 1986 APPROPRIATION

The difference between last year's budget and this year's is shown on this chart. We have five new projects in the budget this year, and a $16.5 million environmental request for this year. All five projects are environmental projects. None are introduced into this year's budget for productivity or production purposes. For all of these projects we are under some sort of an environmental gun to accomplish.

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

REACTOR PRODUCTION ASSURANCE PROGRAM

(DOLLARS IN MILLIONS)

	FY 1986	FY 1987
NEW PRODUCTION REACTOR	$ 6.1	$ 0.0
REACTOR PRODUCTION ASSURANCE	$10.9	$16.7

PURPOSE

TO ENSURE THAT EXISTING PRODUCTION REACTORS CAN OPERATE SAFELY AND EFFECTIVELY BEYOND YEAR 2000 (INCLUDES NPR EFFORT).

NPR PROGRAM

- PROGRAM TO BE DELAYED PENDING OUTCOME OF EFFORTS AT SAVANNAH RIVER AND RICHLAND
- EFFORTS AND STUDIES TO BE BROUGHT TO LOGICAL TERMINATION IN FY 1986

REACTOR PRODUCTION ASSURANCE

A couple of topics that I know this committee is interested in, I will cover briefly. Regarding the New Production Reactor, we have embarked on a new strategy within the Department with respect to what we need in terms of reactors to continue the production of tritium and plutonium for many years to come in support of the stockpile. We are asking for no money for a New Production Reactor program this year.

Instead, we have shifted now to a reactor production assurance program,, based on the fact that we have yet to identify any life-limiting mechanisms for the Savannah River plant reactors.

With respect to N Reactor at Richland, Washington, a graphite moderator reactor, we have identified and we will characterize the life-limiting mechanisms on that particular reactor by adopting a program of selective retubing of the reactor as well as flux flattening within the reactor to extend its life to the mid-nineties.

We consider the real life-limiting factor that you have is graphite growth within the stack. That problem will not need to be attacked until the early 1990 period, and then we can make that decision. We think this is a cost-effective program within the current budget environment at this time.

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

SPECIAL ISOTOPE SEPARATION

FY 1986 ENERGY AND WATER DEVELOPMENT APPROPRIATIONS ACT

CONFERENCE REPORT 99-307

STIPULATES THAT

"... PRIOR TO THE OBLIGATION OF FUNDS FOR THIS PROJECT THE DEPARTMENT SHOULD CONDUCT A 120-DAY PROCESS READINESS REVIEW OF THE COMPETING SPECIAL ISOTOPE SEPARATION (SIS) PROCESSES. THE PROCESS READINESS REVIEW SHOULD BE CONDUCTED BY A COMPETENT PANEL OF EXPERTS IN THE FIELDS OF PRODUCTION PLANT OPERATIONS AND ENGINEERING DESIGN. THE PROCESS SELECTED SHOULD BE THE MOST LIKELY FOR TECHNICAL SUCCESS AND HAVE THE LOWEST OPERATING AND CAPITAL COSTS. IF UPON COMPLETION OF THE REVIEW, THE PANEL AGREES THAT A TECHNOLOGY IS READY FOR PLANT SCALE IMPLEMENTATION, DESIGN OF THE PROJECT SHALL COMMENCE UTILIZING THE SELECTED TECHNOLOGY."

SPECIAL ISOTOPE SEPARATION

This committee also asked for a special process review of the Special Isotope Separation process technology. It actually called for the completion of that review within 120 days. The comparison that was asked for was one of R&D cost; cost of deploying the technology, and constructing the facility.

Up until the point of that report from this committee, we had only concentrated on deploying one type of technology, and that was the Atomic Vapor Laser Isotope Separation or AVLIS at Livermore. We had never developed the plant costs for the competing technology, which is the Molecular Laser Isotope Separation process at Los Alamos.

[Slide follows:]

NUCLEAR MATERIALS PRODUCTION
SPECIAL ISOTOPE SEPARATION
PROGRAM STATUS

- PROCESS READINESS REVIEW
  - $3.8 MILLION FOR SIS PLANT DESIGN AND ENGINEERING KEYED TO REVIEW OF COMPETING TECHNOLOGIES—LLNL/AVLIS AND LANL/MLIS
  - EXAMINE READINESS FOR IMPLEMENTATION AT PLANT SCALE
  - COMPLETE REVIEW IN MARCH 1986
- SITE EVALUATION
  - EVALUATE ALTERNATIVE DOE PRODUCTION SITES
  - IDENTIFY PREFERRED SITE FOR POTENTIAL CONSTRUCTION OF SIS PLANT IF DECISION TO PROCEED IS SUPPORTED BY PROCESS READINESS REVIEW

That review started in January, and they are in fact, meeting this week. This is the committee that was appointed by Dr. Trivelpiece, the chief scientist at the Department. The panel itself is under the guidance and chairmanship of Jack Howard, former Vice President of Sandia. They are writing their report this week, and it should be available by the end of this month.

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET REQUEST
URANIUM ENRICHING
(DOLLARS IN MILLIONS)

	FY 1986	FY 1987
NAVAL REACTORS URANIUM	$160.4	$190.0

- PURCHASE HIGHLY ENRICHED URANIUM FROM PORTSMOUTH GASEOUS DIFFUSION PLANT TO SUPPORT NAVAL REACTORS PROGRAM [deleted] URANIUM AT 97.3 PERCENT U-235 ENRICHMENT)

URANIUM ENRICHING

The program provides funding for uranium enrichment to support Admiral McKee's reactors, 157 operating ships and prototypes, which will require [deleted] of enriched uranium in 1987. His request is up from 1986, and the increase is to support his new Fuel Manufacturing Facility at Savannah River, which will begin producing fuel this summer.

[Slide follows:]

[Deleted.]

With respect to the uranium required for the weapons program, we are asking for no resources in this fiscal year to support the acquisition of additional highly enriched uranium for the weapons program; but I want to alert you that in 1988, we will indeed be forced to come to this committee and ask for resources to start enrichment services to increase our overall inventory of uranium.

In 1963, the President decided to stop all enrichment of uranium for weapons; that we had enough material on hand at that time. It was a total of [deleted] uranium available to us, [deleted] of that was available to the military program.

We are now around the [deleted] region. If the demand for uranium is reflected by this line, the top line represents a [deleted] reserve, which we have always attempted to carry.

We are operating within that condition at the current time, but you will see [deleted] that curve starts up and we will start to lose our reserve and will indeed have lost our reserve after [deleted].

You have supported the refurbishment of a UF-6 to UF-4 conversion facility at Oak Ridge. That particular facility will be on line in 1989.

In order to supply that facility with the necessary UF-6, we will have to request enriching services in 1988. At the current time, we think that request is going to be for about $200 [$320] million.

Over the long term, there will be a requirement [deleted] of material, and the cost of that in total will be nearly $6 billion over about a 10-year period. In addition, there will be a requirement for some less than 93 percent material, which this represents, which will be an additional $900 million.

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT

CHANGES FROM FY 1986 APPROPRIATION

(DOLLARS IN MILLIONS)

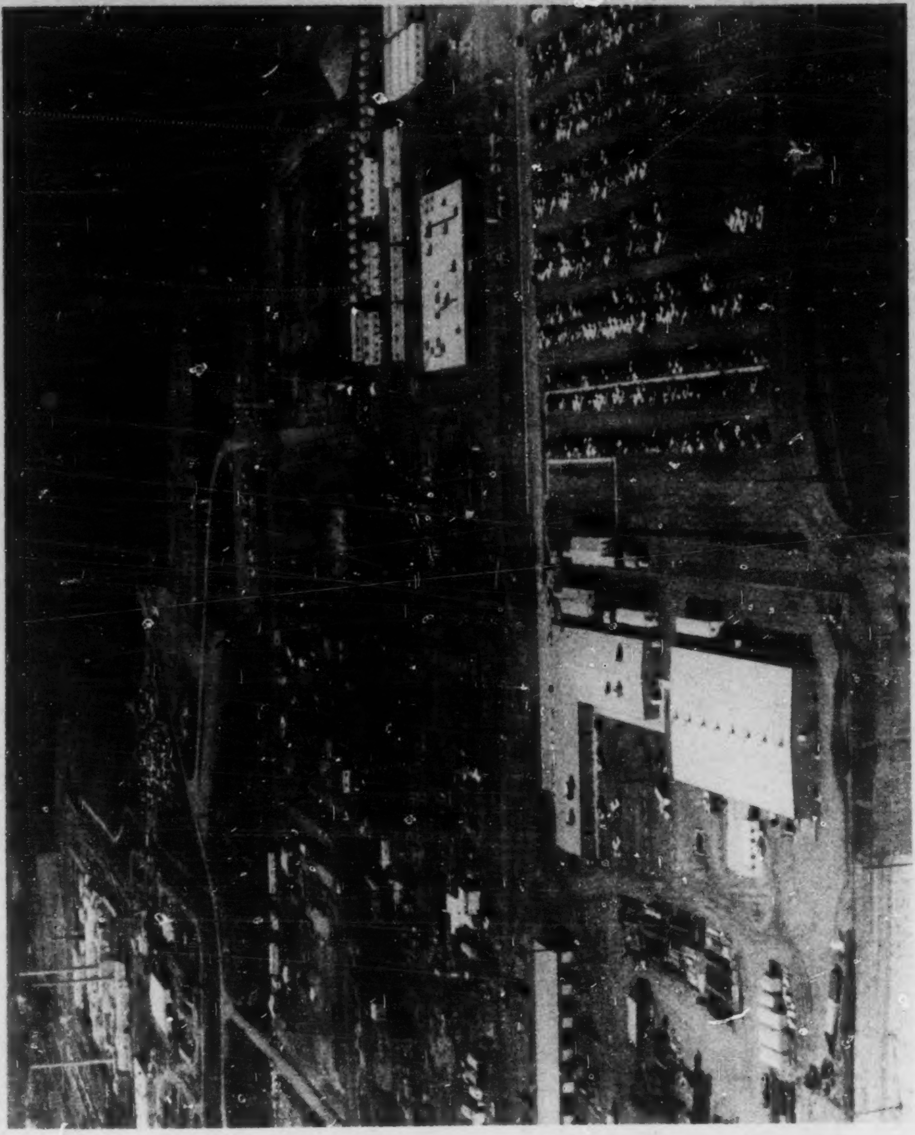
FY 1986 ADJUSTED APPROPRIATION	$ 618.4
• ESCALATION	+ 21.7
• PROVIDES FOR PREOPERATIONAL SUPPORT DWPF VITRIFICATION AND SALTSTONE FACILITIES AT SAVANNAH RIVER	+ 26.1
• TRANSITION WASTE ISOLATION PILOT PLANT FROM CONSTRUCTION TO OPERATIONS	+ 13.9
• SUPPORT OPERATION OF IDAHO TRU PROCESSING FACILITIES	+ 3.7
• PROVIDES FOR B-PLANT OPERATIONS AND GROUT ACTIVITIES AT RICHLAND	+ 5.3
• SUPPORT WASTE TRANSFER OPERATIONS AT SAVANNAH RIVER AND RICHLAND	+ 9.6
• CRITICAL NEW CONSTRUCTION PROJECTS	+ 15.9
• OTHER ADJUSTMENTS	− 10.2
FY 1987 REQUEST	$ 704.4

DEFENSE WASTE AND BYPRODUCTS MANAGMENT

In the Defense Waste program we have some major facilities under construction at the Savannah River Plant and in New Mexico. You will see that this particular budget request for 1987 starts to shift now from a construction-focused budget into an operationally focused budget.

The Waste Isolation Pilot Plant in New Mexico is shifting into operations, as is the Defense Waste Processing Facility. We have started to examine transuranic wastes in Idaho to certify that at the WIPP site in New Mexico, when that comes in line.

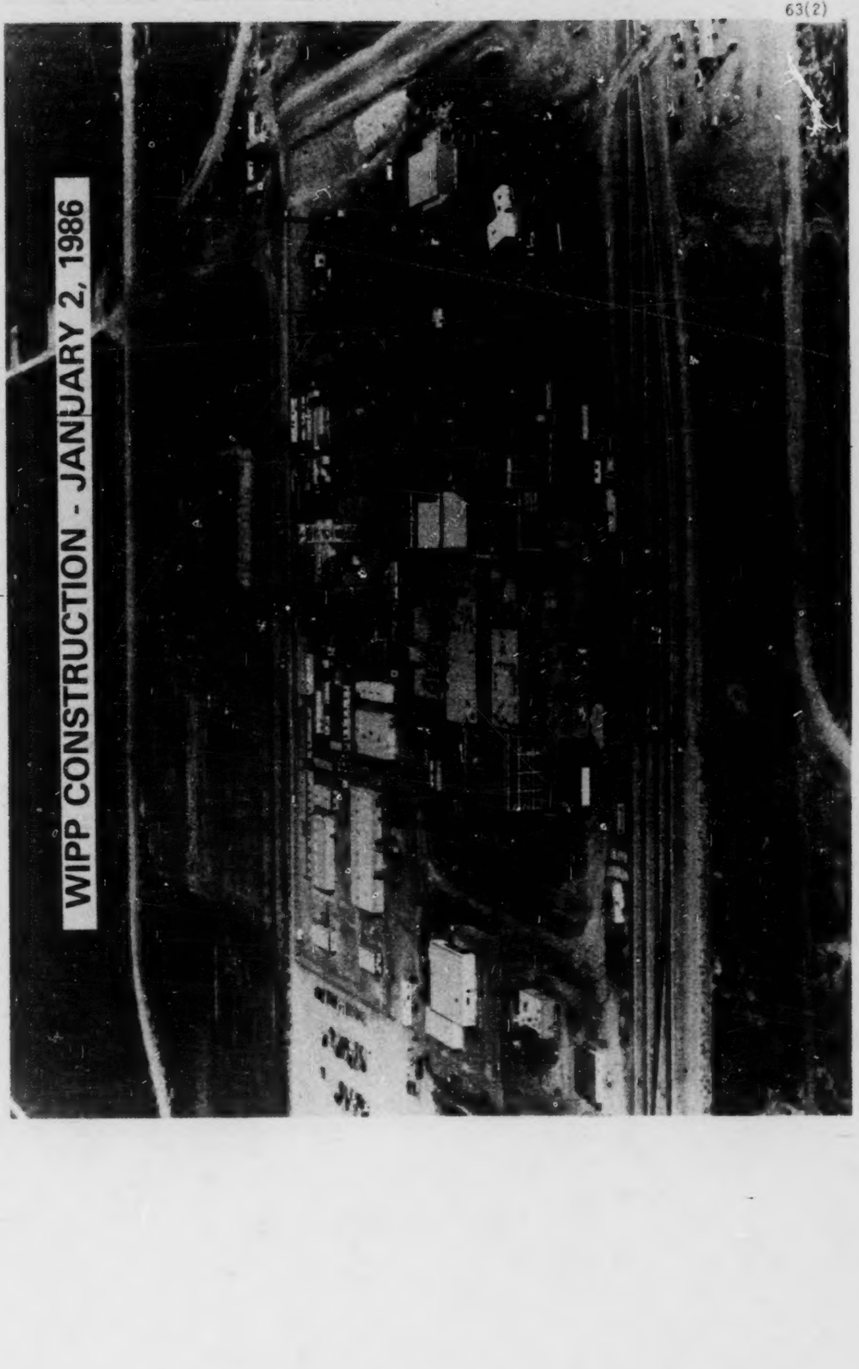
[Slide follows:]



This is a picture of the Defense Waste Processing Facility at Savannah River. It has an $870 million total estimated cost, and is on schedule; about 26 percent complete in terms of construction, about 80 percent complete in terms of design.

[Slide follows:]

63(2)



WIPP CONSTRUCTION - JANUARY 2, 1986

The other major facility we have right now in the waste program is the Waste Isolation Pilot Plant in New Mexico. It has an estimated TEC of $386 million, and is now about 80 percent complete in terms of construction. The design has been completed.

This particular photograph shows the waste handling building. This is the main shaft that goes down some 2150 feet into a salt zone where the TRU waste will be emplaced. On the right is the exhaust shaft. The waste handling building is shown here.

[Slide follows:]

DEFENSE PROGRAMS
NUCLEAR MATERIALS

FY 1987 BUDGET REQUEST
SUMMARY

- MARGINALLY MEETS NUCLEAR MATERIALS PRODUCTION REQUIREMENTS
- SUPPORTS PRIORITY SAFETY, SECURITY AND ENVIRONMENTAL IMPROVEMENTS
- ASSURES CONTINUED SAFE WASTE MANAGEMENT OPERATIONS IN SUPPORT OF NUCLEAR MATERIALS PRODUCTION AND WEAPONS FABRICATION
- PROVIDES MAJOR STEPS TOWARD PERMANENT DISPOSAL OF DEFENSE WASTE

SUMMARY

Our budget request for 1987 marginally meets the stockpile requirements, and supports the priority safety, security and environmental improvements. In terms of the waste program, we are on a path to manage waste effectively within this program, and reach that point where we will reduce, or at least not accumulate into our storage inventory, any additional waste.

ENVIRONMENT, SAFETY AND HEALTH FUNDING

Admiral Foley asked me to address now for overall Defense Programs some of the environmental activities and get those in the record, in terms of the budget request. I will do that with three brief slides of a few comments.

[Slide follows:]

DEPARTMENT OF ENERGY
DEFENSE PROGRAMS

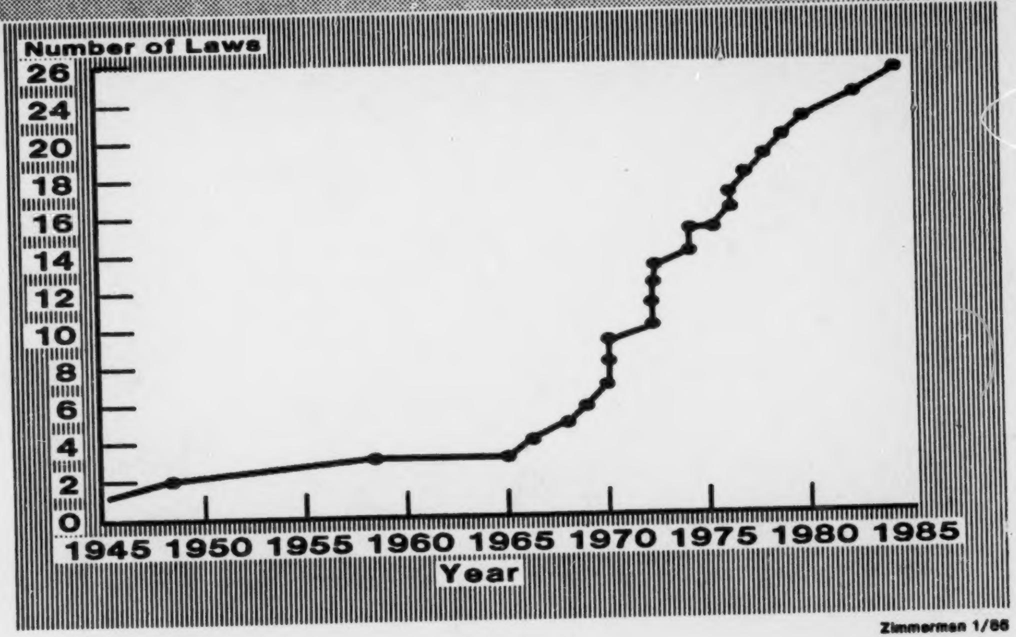
ENVIRONMENT, SAFETY AND HEALTH FUNDING
($B/A IN MILLIONS)

	FY 1985	FY 1986 ADJ. APPROP.	FY 1987 REQUEST
OPERATING EXPENSE	397.3	405.9	409.3
CAPITAL EQUIPMENT	21.2	36.5	30.3
CONSTRUCTION	88.7	69.4	111.6
TOTALS			
ENV COMPLIANCE & PROTECTION	287.3	287.5	320.8
HEALTH & SAFETY	219.9	224.3	230.4
TOTAL	507.2	511.8	551.2

In terms of Gramm-Rudman-Hollings adjustment for fiscal year 1986, there was almost no adjustment in the environmental programs, and that is because we are under several compliance orders from States.

[Slide follows:]

ENVIRONMENTAL LEGISLATION



Zimmerman 1/86

We are under threat of lawsuits from many States and the environmental conditions throughout the plants must be addressed, and they must be addressed in the context of this particular progression of law; things that we have to comply with.

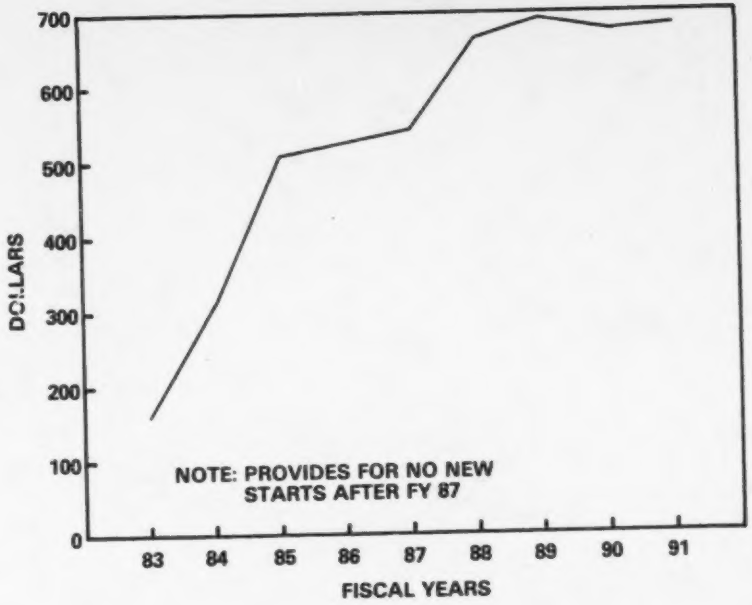
Our newest plant is the plant built in Pinellas, Florida in the mid-1950s. We built plants that are not according to today's standards in terms of complying with the environmental laws, and with the State regulations, or State interpretations of some of those laws.

[Slide follows:]

DEPARTMENT OF ENERGY
DEFENSE PROGRAMS

ENVIRONMENT, SAFETY AND HEALTH ACTIVITIES

($ IN MILLIONS)



NOTE: PROVIDES FOR NO NEW STARTS AFTER FY 87

64(3)

In order to comply with the laws shown on that chart, this is what the budget curves looks like, on a cross-cut basis for environment, safety and health activities.

Notice the rapid ramp which was the result of the 1979 laws, and this curve assumes no new construction. We will be making these types of investments to meet compliance areas. We are under suit in Missouri, California, South Carolina, and Ohio. Ohio announced last week a suit in excess of $400 million resulting from the alleged environmental insult that had occurred up at the Fernald Feed Materials Production Center.

That is the kind of world we are living in. We are doing our best to meet our constrained budget. We are asking for cooling towers at Savannah River, and in order to comply with this new set of laws, we must go back in and mitigate against those thermal insults.

I am sorry I rushed through this so quickly. I would be pleased to respond to your questions.

[The statement of Mr. Meinhardt is included at the end of the hearing.]

Mr. **Bevill** [presiding]. Thank you very much.

The Chair recognizes Mr. Myers.

Mr. **Myers**. Mr. Chairman, we appreciate the presentation the witness gave us. We realize we have an obligation to protect the environment, but that is a tremendous increase in the costs associated with the investment for the environment. It is a tremendous cost, and we have to live with it.

It is one of the prices we pay because of the attitude we have collectively in the country. But it looks somewhat like overkill.

Maybe I shouldn't use that analogy. I have some questions for the record. I will provide them in the interest of time.

Mr. **Bevill**. The Chair recognizes Mr. Fazio.

PLASMA SEPARATION PROCESS

Mr. **Fazio**. One question, and I will ask that augmentations to it be in the record.

Why are we cancelling the Plasma Separation Program after we invested some $137 million in it?

Mr. **Meinhardt**. You are right. We have invested through time a considerable amount of money in the Plasma Separation Program. We had foreseen an application of that process in the Materials Production Program by using it to clean up U–236, for fuel rods at Savannah River.

We and this committee have funded a program to create a new fuel fabrication facility at Savannah River, and in so doing, we get a higher density core material, and the impact of the uranium-236 because of that higher density, is not as great on production as we thought it would be.

That is one factor that led us to defer. The fact that we are in a very, very constrained budget environment also influences our decision.

Mr. **Fazio**. You said defer?

Mr. **Meinhardt**. Defer whether or not we need to clean up the uranium-236. There are alternate methods of getting around that problem. You can buy enriched material and sweeten the material.

Another factor was that the process would have taken us a long time to recover that investment, and to deploy it would have been about a $200 million program. We would not have gotten that investment back for 10–15 years.

If you looked into the economics of the thing, and on that basis, we believe that that program is not worth carrying for the nuclear materials program as a benefit exclusively to the nuclear materials program.

If there are other uses for that technology, and there very well may be, it should be supported. But in terms of the Nuclear Materials program, our applications for it have basically gone away.

Mr. **Fazio**. I will put the rest of the questions in the record.

Thank you, Mr. Chairman.

Mr. **Bevill**. The Chair recognizes Mr. Watkins.

Mr. **Watkins**. I will put my questions in the record.

Mr. **Bevill**. I will also have questions for the record.

We have other Members who are not here that will submit questions for the record.

We appreciate your abbreviating your statement. We will stand adjourned until 10:00 in the morning.

Questions and Answers Prepared for the Record

INDUSTRIAL BASE

Mr. Revill. Please summarize your report on the industrial base for the design and construction of nuclear components for the SSN 21 Class Submarine for the Members of the Committee and the record.

ADM McKee. The industrial base for the design and construction of nuclear components includes two sources for all of the heavy components used in submarine reactor plants. This approach ensures meeting the Navy's needs and maintaining a competitive industrial base for the production of this equipment. Heavy components, such as pressure vessels and large heat exchangers, were the focus of my report since interest in this area led to the requirement for such a report.

The report notes my most experienced suppliers are developing the SSN 21 heavy components. It would not be beneficial to the Navy to introduce additional firms into this development effort. I will have two sources for production of SSN 21 heavy components just as I have for current submarine reactor plants. Current industrial capacity is more than adequate to support Navy nuclear shipbuilding projections. Additional firms would not add any skills to the business that are not already in place. Additionally, high start-up costs and the need for continuing work to sustain qualification and efficiency make it counterproductive and expensive to increase the number of suppliers.

Naval reactor plants are built to standards that are far more stringent than those required for civilian nuclear reactors. Time and money is needed to develop the organization and the manufacturing skills needed to do naval nuclear work. Any attempt to add firms to the SSN 21 development effort, the first attack submarine development in over twenty years, would cost millions and significantly delay an effort that has been ongoing since 1983. Without a major change in the number of naval nuclear ships authorized, no change in business strategy is warranted.

ADVANCED FLEET REACTOR

Mr. Bevill. Please describe the progress being made on the Advanced Fleet Reactor.

ADM McKee. The work on the Advanced Fleet Reactor continues to proceed on schedule. All the basic features of the reactor have been selected, including

[deleted

] fabrication development and material procurement are on a schedule to support starting prototype core fabrication.

MOORED TRAINING SHIP

Mr. Bevill. What is the status of your project to convert a decommissioned submarine into a training facility?

ADM McKee. Detailed conversion design work is continuing by Charleston Naval Shipyard. Design work should be complete by late 1986. The shipyard has started material procurement, removed the missile compartment, and begun some of the conversion work. The supporting ashore military construction project design effort is about 35 percent complete.

FUEL FACTORY

Mr. Bevill. Describe the status of the Materials Facility Construction Project at Savannah River.

ADM McKee. As you know sir, this facility will provide a second source for the manufacture of Navy nuclear fuel. The project is expected to be completed in the next few months. Design work and delivery of facility equipment are essentially complete and construction is 97% complete. As portions of the facility are completed they are being turned over to operations. Fuel processing is expected to begin in the current calendar year.

Mr. Bevill. What is the status of the fuel fabrication facility at Erwin, Tennessee?

ADM McKee. Not good. The strike at Nuclear Fuel Services is going into its ninth month with no end in sight. A limited amount of fuel is being produced by management personnel but not enough to meet our needs. The parent company has been trying to sell NFS.

Mr. Bevill. Do you expect this facility to continue operations for the foreseeable future?

ADM McKee. My intent has been to have two sources of fuel when the Savannah River plant comes into full production. However, with all the uncertainties introduced in the past year, I can't predict where we'll end up.

SENIOR EXECUTIVE ROTATION

Mr. Bevill. I have read that the Secretary of the Navy intends to rotate senior people to new jobs every five years. How will this policy affect the Naval Nuclear Propulsion Program?

ADM McKee. I do not know that it will have any affect.

The policy you refer to concerns rotating Senior Executive Service people. The Secretary's process for reviewing these assignments has not yet led to consideration of the SES people in my program. Seven of my most senior technical people having over 200 years of cummulative experience in nuclear propulsion would be involved. That equates to an average of 30 years per person. It would include such people as my senior expert in reactor materials and the individual who was responsible for designing the reactor plant foundations and fluid systems in our current class of 38 LOS ANGELES attack submarines. Each is a technical expert in their field with a wealth of unique experience.

Such individuals are the heart of my organization and the reason why our nuclear propulsion plants work so well and are so safe. There are no other people outside the program who can come in and replace them. Thus, it makes little sense to move them elsewhere.

I do not want to sound the alarm that someone has told me any of these people must move. They have not. This Administration has strongly supported the Naval Nuclear Propulsion Program. President Reagan, in issuing Executive Order 12344 which defined the Program's responsibilities, made it clear he wanted the basic structure, policies and practices of the Program to continue in the future. This certainly applies to maintaining the continuity we have with our senior technical people.

REACTOR PLANT DISPOSAL

Mr. Bevill. What is the current status on disposing of the reactor plants from decommissioned nuclear powered ships?

ADM McKee. In December 1984, the Secretary of the Navy chose land burial as the method of disposal. This decision was based on the June 1984 Environmental Impact Statement conclusion that land burial is the preferred alternative for disposing of reactor plants from decommissioned nuclear powered ships.

The government burial ground to be used in the near future is the Hanford site in Washington State. The first reactor compartment disposal is scheduled for this spring.

SHIPBUILDING PROGRAM

Mr. Bevill. What is the status of the Department of Defense shipbuiding program with regard to nuclear submarines and surface ships.

ADM McKee. There are 25 nuclear powered submarines currently authorized. Included in this total are 19 SSNs and 6 SSBNs. In addition three nuclear powered aircraft carriers are currently authorized for construction.

FY87 BUDGET REQUEST

Mr. Bevill. Please describe the need for the significant increase in operating expenses.

ADM McKee. The primary cause of the operating expense increase is due to an increase in prototype plant servicing work. We are in the midst of a ten year prototype servicing and refueling effort which involves all eight plants. The work is extensive as the plants are relatively old; the average age of all eight prototypes is over 22 years. These plants are valuable facilities which have been modified time and again to test developmental components, cores, and servicing and operating methods. In addition they are used to provide hands-on training for Navy nuclear plant operator trainees. These plants represent a large, useful investment and are a key factor in the Naval Nuclear Propulsion Program.

The remainder of the increase is due to escalation, Advanced Fleet Reactor work, facility decontamination work and fuel and beryllium shield changeout requirements at the Advanced Test Reactor. Naval Reactors uses the Advanced Test Reactor for materials development work. The Advanced Fleet Reactor work is proceeding well as I noted earlier.

Mr. Bevill. Describe the need to nearly double your capital equipment requirements in FY 1987 and the impact of a delay in this effort.

ADM McKee. The increase is attributable to the replacement of the Knolls Atomic Power laboratory's CDC 7600 computers. The new computer system will replace three CDC 7600 computers which have exceeded design life. The machines average 15 years old, and account for half of the laboratory's computing capabilities. These CDC 7600 computers support the Laboratory's naval nuclear propulsion workload. The computers are an essential tool for reactor core design and reactor safety analysis. The Bettis and Knolls laboratories carry out continuing safety analysis of all operating Naval nuclear reactors. The ability to do these analyses is heavily dependent on the laboratories' computer resources. Maintenance and repair support for this equipment is increasingly difficult to obtain making continued reliance on these aging computers imprudent.

About three years will be needed to convert computer codes to the new computer. Consequently, the laboratory will have to rely on the CDC 7600 computers for another four years - until they average 19 years old, a very old age for a computer.

Delay of this acquisition will extend the period of dependence on these old computers, increasing the possibility of a failure which could affect program work and the ability to assure safe operation of nuclear powered ships. Reduction of computing capability will lead to delays in support of TRIDENT and LOS ANGELES Class submarines and nuclear cruiser reactor safety analysis; design and analysis of installation of the Advanced Fleet Reactor core in the S8G Prototype; and verification of the SSN21 design.

Mr. Bevill. What is the long-range forecast for increased capital equipment funding?

ADM McKee. I expect my future requirements will be about the same as FY 87 due to replacement computer equipment and prototype plant components.

Mr. Bevill. Please describe the need for the increase in General Plant Project funding.

ADM McKee. The $800,000 increase in General Plant Project funds is due to safeguard and security upgrades necessary to meet the DOE-wide push for improved security. The remaining work is heavily oriented to building prototype plant servicing facilities and test facilities.

URANIUM ENRICHMENT

Mr. Bevill. Please describe the requirement for increased uranium enrichment included in the special nuclear material budget.

ADM McKee. The material is needed to run both fuel plants at full production. Nuclear Fuel Services is under contract to run at capacity for about two more years. The Savannah River plant will be up to full production in fiscal year 1987 to check out the facility and to start building a fuel inventory. We need an inventory as a safety margin against shutdowns, increased requirements or other problems like the strike at NFS.

LIGHT WATER BREEDER PROGRAM

Mr. Bevill. When will all core evaluation work on the water cooled breeder be complete and how much remains to be spent?

ADM McKee. Core evaluation work will be completed in FY 1987, thus this is the last budget request. The work in 1987 will consist of continuing proof-of-breeding analyses, core and structural materials examinations, disposal and clean up of examination equipment, and documentation of the technology for use by industry. Of the $13.8 million requested in FY 1987 for completion of the Water Cooled Breeder program, $10.2 million is for core evaluation work. The remaining funds are for defueling activities which consist of preparation and shipment of fuel for long term storage and cleaning up light water breeder reactor core fabrication and examination facilities.

Mr. Bevill. What is planned for FY 1987 and beyond?

ADM McKee. The work planned for FY 1987 will determine the extent of breeding and overall performance of the core and structural materials. The technical data will be documented for use by industry and will provide the basic technology for potentially meeting this country's electric power requirements for hundreds of years. No work is planned beyond FY 1987. While the light water breeder technology will be available to industry, work is still necessary in reprocessing nuclear fuel to take advantage of the technology.

Mr. Bevill. What are the planned applications of this technology?

ADM McKee. I know of no immediate plans to use the light water breeder technology because for the near term uranium supplies are sufficient to keep the cost of current methods of nuclear power generation low relative to a breeder. For the long term, uranium supplies are limited. The light water breeder provides an option to supply the energy needs of our country for hundreds of years through a practical way to use thorium, a plentiful source of fuel for which there has been no major energy-related use. However, this option must be exercised before the limited uranium supplies are expended, as uranium is the only fissionable material found in nature and is required to start any breeder cycle. Industry wants to know the results of the fuel evaluation according to a survey of the commercial nuclear power industry made by the General Accounting Office. In addition, much of the technology to be documented on fuel handling and examination equipment, materials examination results, and spent fuel preparation for long term storage will be applicable to the commercial nuclear industry.

PATENT RIGHTS

Mr. Bevill. Admiral, there is currently a bill in Congress which would give large as well as small businesses title to inventions developed under Government contract. How would that affect your program?

Admiral McKee. The law on this subject currently applies only to small businesses and non-profit organizations. Extending the law to allow large businesses to take title to inventions would have an adverse impact on my program. The prime contractors with which I do business focus all of their technical resources on new developments and technical problems which confront my program. There is a constant exchange of ideas and technical information between these contractors. Allowing these businesses to take title to inventions would disrupt that free flow of information which is necessary for the successful operation of my program. Contractors could be distracted by commercial interests, to the detriment of my program.

The current law recognizes the needs of my program by granting an exclusion from its requirements to Department of Energy Government-owned, contractor-operated facilities primarily dedicated to naval nuclear propulsion work. We need to preserve that principle for all program work.

ADVANCED FLEET REACTOR R&D FUNDING

Mr. Meyers. How much of your advanced reactor development budget for 1987 is devoted to the SEAWOLF reactor?

ADM McKee. About half of our FY 1987 reactor development funds will be devoted to that work, sir.

PRODUCTION REACTORS AT SAVANNAH RIVER

Mr. Bevill. What is the status of the production reactors at Savannah River?

Mr. Meinhardt. Five reactors -- R, P, L, K, and C, were constructed at the Savannah River Plant and placed in operation beginning in December 1953. R Reactor was shut down in June 1964 and placed in an inactive status. L Reactor was shut down in February 1968 at a time when there was insufficient demand for nuclear materials to justify operation of four reactors. Following extensive renovations, it was restarted in October 1985, when the projected demand for nuclear materials showed an additional reactor would be needed. P, K, and C Reactors have operated continuously since startup in the mid-1950's. At this time, C Reactor is undergoing extensive repairs, but it should be operational in a few months.

ENVIRONMENTAL PROBLEMS OF PRODUCTION REACTORS

Mr. Bevill. Please describe the environmental problems associated with the operation of the production reactors.

Mr. Meinhardt. The major environmental problem due to the Savannah River Plant, SRP, reactor operation is the direct discharge of reactor cooling water to onsite creeks. Under the Federal and State of South Carolina implementing regulations for the Federal Water Pollution Control Act of 1972, as amended, the reactor cooling water, which is 160°F, would have to be cooled to 90°F prior to discharge to surface waters. The Department of Energy, DOE, entered into a Consent Order with the South Carolina Department of Health and Environmental Control, SCDHEC, to comply with conditions specified in the National Pollutant Discharge Elimination System permit for SRP. Engineering studies identified several options to cool the reactor thermal discharges. Based on topographic and cost considerations, DOE has recommended, and SCDHEC has indicated concurrence with, the construction of once-through cooling towers for C and K Reactors. DOE has prepared a draft environmental impact statement on alternative cooling water systems at the Savannah River Plant, to be issued by March 28, 1986, for public comment.

Another potential environmental problem associated with production reactor operation is the use of seepage basins to dispose of slightly radioactively contaminated process waste water. Although direct release of this water to the site streams would be acceptable, the seepage basins are used to delay the transport of radionuclides to surface water, thus allowing radioactive decay and a reduction in the quantity of radionuclides reaching the surface water. DOE is analyzing the continued usage of the seepage basins together with other treatment alternatives for the production reactors and is obtaining public inputs on this proposal through the public review of the draft environmental impact statement on waste management activities for groundwater protection at the Savannah River Plant.

CONSTRUCTION OF COOLING LAKE AT SAVANNAH RIVER

Mr. Bevill. What is the status of the construction of the cooling lake at Savannah River?

Mr. Meinhardt. Construction of L Pond was completed in October 1985, and it was immediately placed in operation with the restart of L Reactor. Temperature probes to monitor the ability of the pond to cool the reactor effluent are in operation with further refinements planned.

ADDITIONAL COOLING TOWERS AT SAVANNAH RIVER

Mr. Bevill. Describe the need and cost of additional cooling towers at the Savannah River site.

Mr. Meinhardt. Since the early 1950's, the C, K, and L production reactors at the Savannah River Plant, SRP, have used onsite streams and the Savannah River swamp for cooling of reactor thermal effluents. Provisions of early National Pollutant Discharge Elimination System, NPDES, permits for SRP under the Federal Water Pollution Control Act designated the point of thermal compliance at the Savannah River, thus allowing this type of operation. It should be noted that P Reactor has always utilized an existing onsite cooling lake. In November 1982, during negotiations on a new NPDES permit, the South Carolina Department of Health and Environmental Control determined that, to conform to existing laws and regulations, the point of technical compliance would be changed to the point where the reactors discharge into the onsite streams which are near the reactor buildings. Consequently, a cooling lake was constructed for L Reactor prior to restart of the reactor. In a Consent Order associated with the new NPDES permit, the Department of Energy committed to evaluate and recommend to the State, methods of thermal mitigation for the C and K Reactors, and, subsequently support implementation of the selected alternative. Changes in Environmental Protection Agency regulations on stream reclassification in late 1983 prevented DOE from considering potential partial mitigation options for these reactors, thus once-through cooling towers were the lowest cost option evaluated and were recommended to the State by the Savannah River Operations Office. It is expected to cost $109 million to complete construction of the cooling towers and $7 million annually to operate them.

THERMAL DISCHARGE OFF SAVANNAH RIVER SITE

Mr. Bevill. What is the thermal discharge off the Savannah River site, with and without the cooling lake?

Mr. Meinhardt. Based on 30-year average values for meteorological conditions, the temperature of the L Reactor effluent at the site boundary, which is the Savannah River, would range from 29 degrees Celsius, C, in the summer to 13 degrees C in the winter with L Pond. Without L Pond, the temperature at the same location would range from 33 degrees C in the summer to 21 degrees C in the winter. It is a requirement of the National Pollutant Discharge Elimination System permit that the temperature not exceed 32.2 degrees C and that the change in temperature due to operations not exceed 2.8 degrees C.

THERMAL DISCHARGE OFF SAVANNAH RIVER SITE

Mr. Bevill. What is the thermal discharge off the Savannah River site, with and without the additional cooling towers?

Mr. Meinhardt. The thermal discharges from the C- and K-Reactors flow into the Savannah River mainly through Four Mile Creek and Steel Creek. With the installation of once through cooling towers, the temperature at the mouth of the creeks during reactor operation should be approximately the same as the ambient temperature. I will provide the calculated average creek mouth temperature in a table to be inserted for the record.

(The information follows:)

	Ambient Temperature		Thermal Discharge	
	Winter	Summer	Winter	Summer
Four Mile Creek	11.1°C	24.5°C	15.3°C	38.9°C
Steel Creek	8.8°C	26.0°C	10.8°C	31.2°C

ENVIRONMENTAL DAMAGE AT THE SAVANNAH RIVER SITE

Mr. Bevill. What damage to the environment is being done on and off the Savannah River site as a result of the operation of the production site?

Mr. Meinhardt. The most observed environmental impact of Savannah River Plant operations is the denuded creek beds, which are Four Mile Creek and Pen Branch, and associated deltas in the Savannah River swamp from cooling water discharged from the production reactors. There is virtually no biological life in the hot portion of these creeks and the affected Savannah River swamp system. However, these hot water discharges have no detectable environmental effects on the overall health of the Savannah River. The Department of Energy is proposing the construction of once-through cooling towers to bring the production reactor thermal discharges into compliance with applicable Federal and State of South Carolina requirements.

The other major environmental effect of SRP operations is the contamination of groundwater due to past operating and disposal practice. DOE is aggressively pursuing construction and operation of treatment systems to reduce discharges of pollutants to the environment, operation of a groundwater cleanup system, and assessments of the extent of groundwater contamination so as to control and minimize potential environmental effects. DOE is preparing an environmental impact statement which will provide an opportunity for public inputs on the proposed modifications to the SRP waste management activities to protect groundwater.

There are other environmental effects resulting from SRP operations; for example, releases of radionuclides to the atmosphere and surface water. However, these environmental effects are minor and well within all applicable requirements.

CLEANUP WORK AT FERNALD

Mr. Bevill. Please describe the clean up work that is being conducted at the Fernald site.

Mr. Meinhardt. Currently, and in the near future, the cleanup efforts at the Feed Materials Production Center will concentrate primarily on characterization of waste pits, silo residue, waste streams, groundwater contamination, soil contamination, and buried and aboveground rubble. As completion of characterization activities permit, plans will be developed and implemented to stabilize, as required, and subsequently dispose of waste materials in accordance with applicable laws and regulations. Ongoing cleanup efforts include shipment of low-level wastes to the Nevada Test Site for disposal and improvements in the general housekeeping practices of facility operations.

FERNALD ENVIRONMENTAL FUNDING

Mr. Bevill. What funding is being directed at the cleanup of the Fernald site in FY 1985, FY 1986, and FY 1987?

Mr. Meinhardt. I will submit for the record a table detailing the environmental protection and compliance funding for Fernald for the years requested. This information is based on environmental estimates prior to the award of new operations contract for Fernald to Westinghouse Materials Company of Ohio, or WMCO. WMCO is currently reviewing the environmental requirements at Fernald, and we expect them to recommend a higher allocation of total available funds to the environmental area in FY 1986 and FY 1987.

(The information follows:)

NUCLEAR MATERIALS PRODUCTION
FERNALD ENVIRONMENTAL FUNDING
(B/A IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Operating Expenses	$ 6.0	$ 7.0	$ 9.0
Capital Equipment	4.6	3.9	
Construction			
General Plant Projects	0.1	0.9	
83-D-146, Water Pollution Control	4.1		
87-D-159, Environmental, Safety, and Health Improvements, Phase I			10.0
Total Fernald Environmental	$ 14.8	$ 11.8	$ 19.0

Mr. Bevill. Describe the budget authorization and appropriation for Fernald clean up in FY 1986.

Mr. Meinhardt. The budget authorization and appropriation for Fernald clean up in FY 1986 is $11.8 million, and includes continued funding to comply with applicable environmental requirements, including groundwater, soil sampling, health physics, and outside analytical services. Included in the above amount is $3.9 million in capital equipment for items such as dust collectors, high efficieny particulate air filters, surface decontamination equipment, and an atmospheric dispersion model.

RESEARCH PROGRAMS TO IMPROVE PRODUCTION

Mr. Bevill. Describe the status of research programs designed to improve the production at existing reactors.

Mr. Meinhardt. Research programs at both the Savannah River Plant and the Hanford site are being conducted to assure continued production. At the SRP, studies of potential long-term life-limiting mechanisms and their mitigating actions are currently underway, with a final report expected in late summer of 1988. The ongoing restoration and productivity retention programs will assure the continued reliability of the SRP reactors. A recently completed study of the N Reactor concludes that this facility can be reliably operated through the mid-1990's and that several cost-effective alternatives are available to refurbish N Reactor and extend its useful life well into the next century. Further study and research on these alternatives will take place over the next several years, and decisions will not be required until the late 1980's and can be phased so that the refurbishment program is tailored to material needs and budgetary constraints. Development of a higher productivity plutonium charge, the Mark 22S-25, has been underway at SRP for several years, with operation of a demonstration charge currently scheduled for 1988. Since utilization of this charge will significantly impact urnaium feed material requirements, the implementation decision will be based on an analysis of material supply and budget requirements.

EXTEND LIFE OF N REACTOR

Mr. Bevill. Please describe the program to extend the life of "N" reactor at Richland.

Mr. Meinhardt. N Reactor can be operated safely and economically until the mid-1990's with surveillance, maintenance, and selective replacement of fuel pressure tubes. However, years of neutron bombardment is resulting in the distortion of the graphite stack and embrittlement of the pressure tubes. In addition, normal aging processes are causing gradual deterioration of equipment in the balance-of-plant systems leading to increased reliability and efficiency problems. In order to extend the life of N Reactor beyond the year 2000, we are expanding our graphite stack and pressure tube surveillance program to better characterize the nature and timing of the aging phenomena and to support decisions on the type of renovation work that will be required to extend the reactor life. Presently, we see the need to either refurbish or replace the graphite stack and many of the process tubes in the mid-1990's requiring a construction line item in the early 1990's. The balance-of-plant systems will be addressed as part of a continuing comprehensive maintenance program.

NUMBER OF REACTORS ON TRITIUM

Mr. Bevill. Once the stockpile requirements for plutonium are met, how many reactor years of tritium are required on a continuing basis?

Mr. Meinhardt. Production of tritium in the Savannah River reactors is always scheduled before plutonium production.

DELETE

DELETE

STATUS OF NEW REPLACEMENT REACTOR

Mr. Bevill. What is the status of work on a New Replacement Reactor?

Mr. Meinhardt. The decision to deploy a New Production Reactor, NPR, has been deferred for several years until completion of life extension studies for the existing Savannah River Plant production reactors and refurbishment plans for the N Reactor are finalized and requirements for materials production confirm the need for an NPR. Future actions associated with this include completing the NPR smaller reactor study and continuing restoration, productivity, and retention program.

NEW PRODUCTION REACTOR

Mr. Bevill. How much is included in the budget in FY 1985, FY 1986, and FY 1987 for a New Replacement Reactor?

Mr. Meinhardt. In FY 1985, $3.0 million was expended for the New Production Reactor, NPR, for preconceptual design activities. In FY 1986, $6.1 million was budgeted for NPR activities. However, the NPR program is being deferred, and all efforts and studies are being brought to a logical termination in FY 1986. There are no funds included in the FY 1987 budget for the NPR program.

COST OF NEW PRODUCTION REACTOR

Mr. Bevill. What is the expected TEC of such a reactor?

Mr. Meinhardt. The expected total estimated cost of a large New Production Reactor could range from $2.8 billion for a Heavy Water Reactor to $4.4 billion for a High-Temperature Gas Reactor in 1985 constant year dollars. These estimates assume the Idaho National Engineering Laboratory as the reference site. Other sites were also considered--the Savannah River Plant and the Hanford site.

STATUS OF SITE FOR NEW REPLACEMENT REACTOR

Mr. Bevill. What is the status of determining the site for a New Replacement Reactor and the type of reactor?

Mr. Meinhardt. Since the decision to deploy a New Production Reactor has been deferred several years, any decision as to site and type of reactor has likewise been deferred.

HIGH-TEMPERATURE GAS FOR NEW REPLACEMENT REACTOR

Mr. Bevill. What consideration is being given to the possibility of the New Replacement Reactor using high temperature gas technology?

Mr. Meinhardt. The High-Temperature Gas Reactor concept was included as one of the three large reactor concepts studied for a New Production Reactor.

EMPLOYMENT LEVELS

Mr. Bevill. Please provide the employment levels at all Materials Production sites in FY 1985, FY 1986, and FY 1987.

Mr. Meinhardt. The contractor employment levels at Materials Production sites are shown in a table which I would like to insert for the record.

(The information follows:)

EMPLOYMENT LEVELS*
NUCLEAR MATERIALS PRODUCTION
(FULL-TIME EQUIVALENTS)

COGNIZANT FIELD OFFICE	FY 1985	FY 1986	FY 1987
Albuquerque	338	323	205
Idaho	945	982	982
Oak Ridge	1,486	1,695	2,009
Richland	3,501	3,807	4,084
San Francisco	372	423	441
Savannah River	6,784	6,830	6,895
Total	13,426	14,060	14,616

*This data represents prime contractor operation personnel. Construction subcontractor employment, which fluctuates with the level of construction effort, is not included.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. What is the status of the readiness review of the competing Special Isotope Separation process required in the conference report on the FY 1986 Energy and Water Development Appropriation Act?

Mr. Meinhardt. The process readiness review is being conducted by a team of experts in the fields of science and engineering.

The technologies being reviewed are the Atomic Vapor Laser Isotope Separation, AVLIS, process being developed by the Lawrence Livermore National Laboratory, LLNL, and the Molecular Laser Isotope Separation, MLIS, process under development at the Los Alamos National Laboratory or LANL.

The review team held its initial meeting on January 27, 1986, in Washington, D.C. Briefings on the AVLIS and MLIS processes were held February 17-19, 1986, at LLNL and February 26-28, 1986, at LANL, respectively. A final meeting of the review team was held on March 17-19, 1986, at the Department of Energy's Germantown, Maryland, offices. Results of the review are expected by the end of March 1986.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. Please describe the process being used for this review and describe how it conforms with the requirements of the conference report.

Mr. Meinhardt. In response to the requirements of the conference report, the Department has assembled a team of experts to perform the Special Isotope Separation, SIS, process readiness review under the purview of Dr. Alvin Trivelpiece, Director of the Office of Energy Research. The review is being directed by Mr. William J. Howard, former Executive Vice President of Sandia National Laboratories. Other team members were selected from the Department of Energy, DOE consultants, and the national laboratories and have expertise in fields related to production plant operations and engineering design, as well as the basic science relating to the SIS processes.

As stipulated in the conference report, the review is focused on examining the readiness of the competing processes for plant deployment and identifying the process if any, that is most likely to achieve technical success and have the lowest operating and capital costs. Briefings have been held on each of the two processes and have allowed for structured peer review involving proponent and opponent presentations by each process development laboratory. A summary meeting was held to allow representatives for each process to address any outstanding questions or concerns expressed at the previous review meetings and to make their summary presentations to the review team. The review team report is expected by the end of March 1986.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. Please describe the status of the Special Isotope Separation process.

Mr. Meinhardt. For the AVLIS process under development at LLNL, operation of the first set of plant prototype lasers has been initiated in the Laser Demonstration Facility. Construction is continuing on the Engineering Demonstration System, which is a prototypic installation of plutonium separators to be tested in FY 1987 and FY 1988. Work is also continuing on the balance-of-plant pyrochemical processes. These laser systems, separators, and plutonium processes are plant-scale demonstrations and their successful operation will provide the data needed should it be decided to proceed with plant construction and operation. Work is also continuing on the balance-of-plant pyrochemical processes.

For the MLIS process under development at LANL, plutonium operations were started this year in the SIS-III facility. Initial isotope separation experiments are scheduled for the third quarter of FY 1986. The SIS-III facility contains a continuous gas flow loop in which the important parameters of the MLIS process can be demonstrated.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. What is the funding for this program in FY 1985, FY 1986 and FY 1987?

Mr. Meinhardt. Funding levels for the two plutonium Special Isotope Separation, SIS, processes for FY 1985, FY 1986, and FY 1987 are shown in a table which I would like to insert for the record.

(The information follows:)

PLUTONIUM SPECIAL ISOTOPE SEPARATION FUNDING
(DOLLARS IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Atomic Vapor Laser Isotope Separation	$ 69.0	$ 75.0	$ 75.9
Molecular Laser Isotope Separation*	20.5	18.4	17.9
Special Isotope Separation Plant Project	0.0	3.8	0.0
Total	$ 89.5	$ 97.2	$ 93.8

---

*Funding for Molecular Laser Isotope Separation is contained in the appropriations for process development and is not included under the SIS program.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. To what extent has the Department of Defense shown support for this program?

Mr. Meinhardt. DOD has supported the need for a Special Isotope Separation weapon-grade plutonium facility. To sustain the SIS research and development program and to provide for an SIS construction option, DOD has agreed to transfer $35 million within the 050 account to Department of Energy to augment the DOE allocation of $40.9 million for SIS in FY 1987.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. What is the status of project 86-D-148 and what funding is included in the FY 1987 budget?

Mr. Meinhardt. In FY 1986, Special Isotope Separation funds are being utilized to complete the conceptual design of a weapon-grade plutonium SIS plant. Also in FY 1986, in accordance with provisions of the FY 1986 Energy and Water Development Appropriations Act, Public Law 94-141, the two SIS processes being developed by the Department are the subject of an ongoing review directed toward examining their readiness for deployment and the designation of the most suitable process, if any, for a production plant. No funding is included in the FY 1987 budget request for project 86-D-148.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. If a decision is made to proceed with this project in FY 1986, how much is available for reprogramming to the project in FY 1987?

Mr. Meinhardt. The total FY 1987 funding level requested for the plutonium Special Isotope Separation program is $75.9 million. Of this total, approximately $50.9 million would be needed to continue the process development activities. A plant project funding of $25 million in FY 1987 would support a FY 1994 deployment schedule. A reprogramming to the plant project of $25 million in FY 1987 funds would be required if a decision were made to proceed with the project on that schedule.

PROCESS FACILITY MODIFICATIONS

Mr. Bevill. Please describe the progress on the Process Facility Modification at Richland, Washington.

Mr. Meinhardt. The proposed Process Facility Modifications facility design is currently 30 percent complete. A draft environmental impact statement, analyzing the potential environmental effects that may result from the construction and operation of the facility, has been completed and is expected to be released for public review and comment next month, April 1986. Facility construction is scheduled to begin in early CY 1987.

PROCESS FACILITY MODIFICATIONS

Mr. Bevill. Please describe the advantages of this facility.

Mr. Meinhardt. The Process Facility Modifications, PFM, project will provide a new head-end capability to the Plutonium Uranium Extraction or PUREX plant, allowing the Department to recover the plutonium contained in the irradiated Fast Flux Test Facility fuel, which is now inaccessible, and to provide an improved method of processing irradiated fuel from the N Reactor. The spent fuel from FFTF contains Defense Programs plutonium which is intended to be blended with high-purity plutonium to meet weapon-grade plutonium requirements. However, technological advancements, such as the Special Isotope Separation program, may provide alternatives to blending, and the FFTF plutonium could be used as feed for SIS. Processing of N Reactor fuel in PFM will have the advantage of eliminating the need for chemically decladding the N fuel in the PUREX plant and will result in a 90 percent reduction in the volume of radioactive liquid waste generated each year. In addition, the associated reduction in long-term waste management efforts and savings in eventual waste disposal costs will be significant. Finally, releases to the environment will be reduced by preparing the N fuel in the PFM for subsequent PUREX plant processing.

URANIUM ENRICHING

Mr. Bevill. Please justify the requirement to increase the funding for Uranium Enrichment. Please indicate how much of this funding is for working inventory of the Uranium Enrichment enterprise.

Mr. Meinhardt. Additional separative work is required to provide enriched material for the N Reactor at Richland and for the Naval Reactors program.

A total of $190 million, or an increase of $29.6 million, is needed to support Naval fuel fabrication at both Nuclear Fuel Services at Erwin, Tennessee and at the Savannah River Plant Fuel Materials Facility. NFS has a contract to fabricate fuel

DELETE

DELETE

The N Reactor requirements are dependent on the amount of fuel recycled from Richland to the Feed Material Production Center, FMPC, at Fernald. A total of $14.5 million, or an increase of $5.3 million above FY 1986 is required to meet N Reactor requirements.

No funds are included in the budget for uranium working inventories.

REPORT ON SPECIAL NUCLEAR MATERIALS

Mr. Bevill. Please describe the results of the recent review of the Materials Production program required by Armed Services authorization legislation.

Mr. Meinhardt. The Report to the Committees on Armed Services of the Senate and House of Representatives detailed military requirements and sources of special nuclear materials through FY 1991. During FY 1986-FY 1991 *DELETE* warheads and bombs are projected to be produced by the Department of Energy and delivered to the Department of Defense based on Gramm-Rudman-Hollings budgetary constraints.

DELETE

The Department of Energy can marginally meet these requirements if no major operational problems occur and adequate funding is available

DELETE

STATUS OF PSP

Mr. Bevill. Please describe the status of the Plasma Separation Process?

Mr. Meinhardt. The original mission for the Plasma Separation Process, PSP, was the separation of U-236 from the highly enriched uranium driver fuel used in the Savannah River Plant reactors. Based on cost, need, benefit and fiscal constraints, this mission was indefinitely deferred. Subsequent to this, a potential use for PSP was identified, by the contractor, of separating Nickel isotopes for nuclear isotope power supplies. A preliminary analysis of this mission by DOE found little need for the nickel. Based on the interest that the Congress has shown in the Nickel mission and in PSP in general, DOE is reevaluating the Nickel mission and the PSP program.

PSP FUNDING STATUS

Mr. Bevill. $26 million was identified for the Plasma Separation Process in the FY 1986 appropriation report. What is the status of funding for this work?

Mr. Meinhardt. The funding for the Plasma Separation Process was reduced from $26 million to $25 million as a result of Gramm-Rudman-Hollings. Of the $25 million, $15.7 million has been provided for PSP process development and $2.5 million has been provided for gyrotron development in support of the PSP program. The remaining $6.8 million is currently held at Headquarters awaiting allocation.

SUBCOMMITTEE NOTIFICATION OF PSP RESCOPING

Mr. Bevill. If the Department proposes to rescope or significantly modify the PSP project in FY 1986, would you plan to comply with the Subcommittee's reprogramming procedures?

Mr. Meinhardt. The Department is currently evaluating its plans for the PSP program. If a decision is made to redirect the PSP program, a reprogramming letter will be submitted to the Congress.

SPECIAL ISOTOPE SEPARATION

Mr. Bevill. How much is included in the FY 1986 and FY 1987 budgets for SIS, separately identifying the Livermore, Los Alamos and TRW process?

Mr. Meinhardt. Defense Programs funding for these processes in FY 1986 and FY 1987 are shown in a table that I would like to insert for the record.

(The information follows:)

ISOTOPE SEPARATION FUNDING
(DOLLARS IN MILLIONS)

	FY 1986	FY 1987 Request
Lawrence Livermore National Laboratory, Atomic Vapor Laser Isotope Separation Process	$ 78.8	$ 75.9
Los Alamos National Laboratory, Molecular Laser Isotope Separation Process	18.4	17.9
TRW Plasma Separation Process	25.0	0.0

ENVIRONMENTAL PROJECTS

Mr. Bevill. Please provide a table showing the total funding for environmental projects included in the Nuclear Materials Production budget by location for FY 1985, FY 1986, and FY 1987.

Mr. Meinhardt. I will be pleased to provide for the record a table showing the information you have requested.

(The information follows:)

ENVIRONMENTAL PROJECTS
NUCLEAR MATERIALS PRODUCTION
(B/A IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Idaho			
General Plant Projects	$ 0.0	$ 0.0	$ 0.3
Oak Ridge			
General Plant Projects	0.1	0.9	0.0
83-D-146 Water Pollution Control	4.1	0.0	0.0
87-D-159 Environmental, Safety, and Health Improvements	0.0	0.0	10.0
Richland			
General Plant Projects	0.0	0.7	1.5
Plant Engineering & Design	0.3	0.0	0.0
87-D-149 Reduced Chemical Discharges to Process Sewers	0.0	0.0	3.2
87-D-150 Effluent Treatment Facility	0.0	0.0	4.0
Savannah River			
General Plant Projects	1.4	1.9	1.5
81-D-143 L Reactor Upgrade	15.0	0.0	0.0
83-D-147 Pollution Discharge Elimination	1.3	0.0	0.0
83-D-148 Non-Radioactive Hazardous Waste Management	9.5	1.7	0.0
86-D-154 Effluent Treatment Facility	0.0	8.6	15.7
87-D-152 Environmental Protection Plantwide	0.0	0.0	1.5
87-D-156 Reactor Effluent Thermal Mitigation	0.0	0.0	5.0
Total Environmental Projects	$ 31.7	$ 13.8	$ 42.7

Mr. Bevill. Within reactor operations, provide the FY 1985, FY 1986, and FY 1987 budgets for Oak Ridge, Richland, and Savannah River. Please provide a breakdown of the activities at each location and justify the change from FY 1986 to FY 1987 in terms of quantifiable product.

Mr. Meinhardt. I would like to provide this information for the record.

(The information follows:)

REACTOR OPERATION FUNDING
(B/A IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Oak Ridge	$ 65.6	$ 73.7	$ 87.7
Richland	171.2	177.8	205.3
Savannah River	267.6	288.0	322.7

PROGRAM DELIVERABLES
MATERIALS PRODUCTION

	Unit of Measure	FY 1986	FY 1987
Reactor Operations			
Feed Material Production			
Slightly Enriched Uranium billets for N Reactor	MTU	1,175	1,100
Depleted Uranium (DU) Cores for SR	MTU	1,740	2,080
Normal Uranium Cores for SR	MTU	370	340
DU Derbries to Y-12		*DELETE*	
Conversion of Highly Enriched Uranium (HEU) at Y-12			
HEU shipped to SR	kgs	12.300	10.400
Enriched Lithium Compounds		*DELETE*	
Savannah River Reactors (P, C, K, L)			
Reactor Days Operation	Days	954	1,117
Tritium Production		*DELETE*	
Plutonium-239 Production			
Fuel and Target Element Production			
Target Tubes		3,280	4,150
Fuel Tubes		4,000	4,500
Housings		10,480	8,100
Slugs		210,000	213,000
N Reactor			
Reactor Days Operation	Days	170	194
Plutonium Production		*DELETE*	
Steam Revenues	$\$ X 10^6$	36.7	54.4
Fuel Fabrication	MTU	830	830
Total Material Produced			
Plutonium-239		*DELETE*	
Tritium			

PROCESSING

Mr. Bevill. Within processing of Nuclear Materials, provide the FY 1985, FY 1986, and FY 1987 budgets for Savannah River, Richland, Idaho Falls, Oak Ridge, Los Alamos, Livermore, and Santa Susana. Please provide a breakdown of the activities at each location and justify the change from FY 1986 to FY 1987.

Mr. Meinhardt. The processing account increases by 7.5 percent from FY 1986 to FY 1987. Of the increase, 5 percent is for inflation. The remaining 2.5 percent in growth is for the increased throughput required at these processing facilities. I would like to provide you with a table of quantities to be processed for the period requested, as well as a table showing the funding information requested, for the record..

(The information follows:)

NUCLEAR MATERIALS PRODUCTION
Program Deliverables
Processing of Nuclear Materials
FY 1986-1987

	Measurement	FY 1986	FY 1987
Idaho			
Krypton-85 Recovered	Curies	20.000	50,000
Uranium-235	Kilograms		
Savannah River			*DELETE*
Plutonium	Kilograms		
Highly Enriched Uranium	Kilograms	5,868	7,457
Richland			
Plutonium through PUREX	Kilograms		
Plutonium through PRF	Kilograms		
Los Alamos Processing			
Plutonium Oxide to Metal	Kilograms		*DELETE*
Plutonium from Scrap	Kilograms		
Total Nuclear Materials Recovered*			
Plutonium	Metric Tons		
Tritium	Kilograms		
Highly Enriched Uranium	Metric Tons	5.9	7.5

---

* Some material is processed twice during any one year, e.g., PUREX fuel grade plutonium oxide is processed at Richland and blended at Savannah River.

NUCLEAR MATERIALS PRODUCTION
Analysis of Processing Account
(Budget/Authority in Millions)

Site	Activities	FY 1985	FY 1986	FY 1987
Los Alamos	Oxide Recovery	$12.3	$12.6	$ 5.0
	Plutonium Scrap Recovery	8.6	9.3	5.0
	Technology Development/Exchange	0.0	2.8	3.0
	Molecular Fluor./Safety Studies*	1.7	0.0	0.0
		$22.6	$24.7	$15.0
Chicago	Experimental Breeder Reactor Fuel Shipments	$ 1.0	$ 0.3	$ 0.8
Idaho	Environmental	$ 3.5	$ 3.8	$ 3.9
	Safeguards and Security	3.5	4.1	4.2
	Naval Fuels & Non-Production Fuels	46.9	51.2	56.9
	Idaho Restoration	4.5	5.0	6.2
	ROVER Fuels Processing	1.1	0.0	0.0
		$59.5	$64.1	$71.2
Oak Ridge	Uranium Scrap Processing	$ 1.0	$ 1.7	$ 1.8
	Uranium Recovery from R&D Programs	0.5	1.1	1.2
	Californium-252 Recovery	0.0	1.8	2.0
		$ 1.5	$ 4.6	$ 5.0
Richland	Process Facility Modification**	$ 8.2	$ 0.0	$ 0.0
	PUREX Operations	62.0	68.9	76.3
	Environmental	0.0	0.8	0.0
	Safeguards and Security	15.1	11.5	16.5
	Plutonium Scrap	26.1	34.0	34.7
	Special Isotope Separation	14.0	9.7	8.8
		$125.4	$124.9	$136.3
Santa Susana	Non-Production Fuels Decladding	$ 5.4	$ 6.0	$ 5.2
Livermore	Special Isotope Separation	$46.0	$60.4	$41.1
Savannah River	Environmental	$ 5.7	$ 6.4	$ 6.4
	Safeguards and Security	14.9	18.8	15.4
	Processing of Reactor Fuels	115.2	117.2	135.4
	Fuels Reduction to Metal	31.0	32.0	33.4
	Non-Production Scrap Recovery	1.5	1.3	1.6
	Special Recovery Facility Operations	3.2	4.1	8.0
		$171.5	$179.8	$200.2
Headquarters	Special Isotope Separation	$ 0.0	$ 0.0	$ 25.0
Total Processing of Nuclear Materials		$432.9	$464.8	$499.8

---

* Funding provided in Support Services in FY 1986.

**Funding transferred to Support Services in FY 1986-1987.

SUPPORTING SERVICES

Mr. Bevill. Within supporting services, provide the FY 1985, FY 1986, and FY 1987 budgets for each location. Please provide a breakdown of the activities at each location and justify the change from FY 1986 to FY 1987.

Mr. Meinhardt. Supporting services is an integral portion of our budget and contains activities essential to maintain production operations for a program as large as the Nuclear Materials Production program. If you take into consideration escalation at 5 percent, our supporting services program growth actually decreases by approximately $10 million. I will provide a table for the record which details these essential activities by location for the years requested.

(The information follows:)

NUCLEAR MATERIALS PRODUCTION
ANALYSIS OF SUPPORTING SERVICES
(B/A IN MILLIONS)

Site	Activities	FY 1985	FY 1986	FY 1987
AL	Molecular Laser Isotope Separation Program	$ 18.6	$ 17.8	$ 16.8
	Safety Studies	2.5	3.2	2.7
	Molecular Fluorination Development	0.0	1.0	0.0
	Robotics Development	1.0	1.0	1.3
	Software Development	0.1	0.3	0.1
	Chemical Isotope Separation	0.3	0.2	0.0
		$ 22.5	$ 23.5	$ 20.9
ID	Fast Startup	$ 9.6	$ 0.0	$ 0.0
	Other Startup Costs	1.3	2.1	1.6
	New Production Reactor	1.0	0.3	0.0
	Conceptual Engineering/Design	1.7	0.8	1.0
	Inventories	1.4	0.9	0.8
	Safeguards and Security	0.4	0.0	0.1
	Miscellaneous	0.7	0.1	0.0
		$ 16.1	$ 4.2	$ 3.5
OR	Startup, Shutdown, Standby	$ 0.4	$ 0.4	$ 4.7
	Transportation and Shipments	0.6	0.6	0.8
	Weapons Production Support	9.4	17.0	20.0
	Process Development	3.7	0.6	2.4
	Conceptual Engineering	3.8	2.6	2.8
	NLO Contract Phaseout	0.0	1.5	0.8
	Uranium-233 Processing	6.4	6.2	5.1
	Safeguards and Security	0.0	1.1	1.6
	Inventories	0.2	0.3	0.5
	Motor Rewinding-GAT	2.0	2.0	2.0
	Miscellaneous	0.5	0.0	0.6
		$ 27.0	$ 32.3	$ 41.3
RL	Startup, Shutdown, Standby	$ 3.8	$ 2.0	$ 2.1
	Facilities Restoration	1.6	1.1	0.0
	Tritium Research and Development	0.0	3.0	0.0
	Process Development	0.8	1.0	0.7
	Conceptual Engineering	4.9	1.1	2.9
	Process Facility Modifications	1.3	6.5	11.2
	Site Cleanup	0.1	0.6	0.0
	Retirement and Disability	1.1	1.5	1.3
	Nuclear Materials Management	3.5	5.5	3.8
	T Plant Operation	1.3	2.7	2.5
	Safeguards and Security	17.0	13.1	15.5
	Inventories	1.0	3.2	3.0
	Environmental	1.8	0.0	0.0
	Miscellaneous	1.1	0.3	0.0
		$ 39.3	$ 40.5	$ 43.0

Site	Activities	FY 1985	FY 1986	FY 1987
SAN	Plasma Separation Process	$ 20.0	$ 18.2	$ 0.0
	Miscellaneous	0.0	0.4	0.0
		$ 20.0	$ 18.6	$ 0.0
SR	Startup, Shutdown, Standby	$ 2.4	$ 0.6	$ 0.5
	Facilities Restoration	8.4	1.8	0.0
	Process Development	32.5	26.5	40.4
	Fuel Improvements Program	2.1	0.0	0.0
	Environmental/Site Cleanup	62.1	36.5	27.1
	Conceptual Engineering	17.0	16.6	19.6
	Safeguards and Security	13.0	11.8	16.9
	Long Range Planning	2.0	2.3	2.4
	Warehousing	0.5	0.4	0.5
	Change in Inventories	4.6	8.1	16.0
	Miscellaneous	1.8	9.7	18.4
		$ 146.4	$ 114.3	$ 141.8
HQ/CH	New Production Reactor	$ 3.0	$ 3.5	$ 0.0
	Plasma Separation Process	0.0	6.8	0.0
	Miscellaneous	1.7	6.2	2.0
Total Supporting Services		$ 276.0	$ 249.9	$ 252.5

FUNDING BY LOCATION

Mr. Bevill. Please provide a table showing total funding at the various locations supported by Nuclear Materials Production for FY 1985, FY 1986, and FY 1987. Please identify separately each construction project.

Mr. Meinhardt. I would like to provide this information in a table for the record.

(The information follows:)

NUCLEAR MATERIALS PRODUCTION
(In Millions of Dollars)

	FY 1985	FY 1986	FY 1987
Albuquerque			
Operating Expenses	$ 46.9	$ 49.9	$ 36.0
Capital Equipment	5.2	4.2	3.0
Construction			
General Plant Projects	1.1	0.9	0.9
Total Albuquerque	$ 53.2	$ 55.0	$ 39.9
Idaho			
Operating Expenses	$ 78.5	$ 70.3	$ 77.7
Capital Equipment	10.9	10.0	10.2
Construction			
General Plant Projects	4.5	4.0	4.2
84-D-137, Facility Security Sys. Upgrade	5.0	4.7	0.3
85-D-139, Fuel Processing Restoration	10.0	13.5	35.0
82-D-128, Plant Perimeter Security Systems Upgrade	0.4	0.0	0.0
82-D-136, Fuel Processing Fac. Upgrade	1.0	0.0	0.0
Subtotal Construction	$ 20.9	$ 22.2	$ 39.5
Total Idaho	$ 110.3	$ 102.5	$ 127.4
Oak Ridge			
Operating Expenses	$ 236.9	$ 282.3	$ 340.7
Capital Equipment	11.6	15.7	29.6
Construction			
General Plant Projects	1.5	4.7	6.0
87-D-159, Environmental Improv., FMPC	0.0	0.0	10.0
86-D-149, Productivity Retention Prog.	0.0	6.6	21.8
85-D-140, Productivity & Radiological Improvements, FMPC	3.0	15.0	23.5
84-D-136, Enriched Uranium Conversion Facility Modification (Y-12)	4.4	12.2	3.0
83-D-146, Water Pollution Control, FMPC	4.1	0.0	0.0
82-D-124, Restoration of Production Capabilities, Phases II-V	5.7	0.0	0.0
Subtotal Contruction	$ 18.7	$ 38.5	$ 64.3
Total Oak Ridge	$ 267.2	$ 336.5	$ 434.6

NUCLEAR MATERIALS PRODUCTION
(In Millions of Dollars)

	FY 1985	FY 1986	FY 1987
Richland			
Operating Expenses	$ 335.8	$ 343.0	$ 384.6
Capital Equipment	24.7	22.4	30.7
Construction			
General Plant Projects	8.9	8.0	8.7
Plant Engineering and Design	1.7	0.0	0.0
87-D-149, Reduced Chimical Discharge	0.0	0.0	3.1
87-D-150, Effluent Treatment Facility	0.0	0.0	4.0
86-D-149, Productivity Reten. Prog.	0.0	3.1	17.7
86-D-150, In-Core Neutron Monitoring System, N Reactor	0.0	5.1	2.1
86-D-151, PUREX Electrical Sys. Upgrade	0.0	2.4	3.9
85-D-136, Components Protection System	3.3	0.0	0.0
85-D-137, Vault Safety SNM Inven. Sys.	2.5	1.9	0.0
84-D-135, Process Facility Modifications	10.0	14.5	35.0
82-D-124, Restoration of Prod. Capabilities, Phases II-V	8.7	1.1	0.0
82-D-126, Reactor Safety & Reliability	5.5	1.8	0.0
Prior Year Projects	0.0	(1.6)	0.0
Subtotal Construction	$ 40.6	$ 36.3	$ 74.5
Total Richland	$ 401.1	$ 401.7	$ 489.8
San Francisco			
Operating Expenses	$ 71.4	$ 85.0	$ 46.3
Capital Equipment	8.0	4.5	1.0
Construction	0.0	0.0	0.0
Total San Francisco	$ 79.4	$ 89.5	$ 47.3
Savannah River			
Operating Expenses	$ 602.6	$ 601.4	$ 682.0
Capital Equipment	44.2	50.4	50.6
Construction			
General Plant Projects	14.2	13.3	15.1
87-D-152, Environ. Prot. Plantwide	0.0	0.0	1.5
87-D-156, Reactor Effl. Thermal Mitig.	0.0	0.0	5.0
86-D-149, Prod. Retention Program	0.0	9.9	36.8
86-D-152, Reactor Elec. Dist. Sys.	0.0	2.7	7.7
86-D-153, Add. Line III Tritium Furnace	0.0	1.8	7.3
86-D-154, Effluent Treatment Facility	0.0	8.6	15.7
86-D-156, Plantwide Safeguard Systems	0.0	2.7	13.9
86-D-157, Hydrofluorination Sys., FB-Line	0.0	2.0	2.5
85-D-145, Fuel Production Facility	5.8	18.0	35.5
84-D-130, Mod. Processing Fac. Substations	0.2	0.0	0.0
84-D-134, Safeguards and Security Improvements, Plantwide	13.5	6.3	14.7
83-D-148, Non-Radioactive Hazardous Waste Management	9.5	1.7	0.0

NUCLEAR MATERIALS PRODUCTION
(In Millions of Dollars)

	FY 1985	FY 1986	FY 1987
Savannah River (cont'd)			
83-D-180, Facility Storage Mods.	$ 3.4	$ 0.0	$ 0.0
82-D-124, Restoration of Production Capabilities, Phases II-V	58.3	38.5	7.8
82-D-126, Reactor Safety and Reliability	5.8	0.0	0.0
82-D-127, Safeguards Improvements	12.9	0.0	0.0
82-D-201, Special Plutonium Recovery Facilities, JB-Line	42.4	4.4	0.0
81-D-143, L Reactor Upgrade	15.0	0.0	0.0
Prior Year Projects	1.9	(1.8)	0.0
Subtotal Construction	$ 182.9	$ 108.1	$ 163.5
Total Savannah River	$ 829.7	$ 759.9	$ 896.1
Headquarters and Miscellaneous			
Operating Expenses	$ 9.1	$ 14.9	$ 29.0
Capital Equipment	0.9	2.2	1.0
Construction			
General Plant Projects	0.3	1.0	1.0
Prior Year Projects	0.0	1.1	0.0
86-D-148, Special Isotope Separation Plant	0.0	3.8	0.0
Subtotal Construction	$ 0.3	$ 5.9	$ 1.0
Total Headquarters and Miscellaneous	$ 10.3	$ 23.0	$ 31.0
TOTAL NUCLEAR MATERIALS PRODUCTION	$1,751.2	$1,768.1	$2,066.1

Mr. Bevill. Please provide a table showing the funding in the nuclear materials budget for environmental improvements and safeguards and security for FY 1985, FY 1986, and FY 1987.

Mr. Meinhardt. I will submit the table you have requested as an insert for the record.

(The information follows:)

ENVIRONMENTAL AND SAFEGUARDS AND SECURITY FUNDING
(B/A IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Environmental			
Operating Expenses	$ 89.8	$ 66.7	$ 61.5
Capital Equipment	9.6	11.4	7.7
Construction	31.7	13.2	42.7
Total	$ 131.1	$ 91.3	$ 111.9
Safeguards and Security			
Operating Expenses	$ 96.9	$ 101.2	$ 109.5
Capital Equipment	14.7	10.4	15.3
Construction	45.5	21.7	34.5
Total	$ 157.1	$ 133.3	$ 159.3

The above funding for operating expenses and capital equipment are cross cut expenses and are not separately identified in our budget presentations.

ENVIRONMENTAL PROTECTION EFFORTS AT THE SAVANNAH RIVER PLANT

Mr. Bevill. Please describe the status of the environmental protection efforts at Savannah River.

Mr. Meinhardt. Major progress has been made over the past year in characterizing the environmental conditions on the site, defining required corrective actions, and implementing many of those actions. Specific examples include: putting into operation an effluent treatment facility in the fuel fabrication area and closing the seepage basin previously utilized; operation of production air strippers to remove chlorocarbons from the groundwater; initiation of design of an effluent treatment facility for the separations area; and major construction progress on the Defense Waste Processing Facility which will process high-level waste into a form suitable for long-term disposal.

Despite this significant progress, problem areas are still being identified, and work is now focused on comprehensive evaluations and action plans. The most significant work areas are in meeting the requirements of the Clean Water Act; Resource Conservation and Recovery Act; and Comprehensive Environmental Response, Compensation, and Liability Act. The largest problem that must be addressed both near term and long term is the management of hazardous wastes, low-level radioactive wastes, and mixtures of these wastes. Extensive data bases and comprehensive plans based upon the statutes and regulations are being prepared to permit prudent management decisions. The National Environmental Policy Act documentation is being prepared for decisions, as appropriate.

THERMAL MITIGATION AT SAVANNAH RIVER

Mr. Bevill. Describe the needs that are to be met by the requirements of project 87-D-156, Reactor Effluent Cooling Water Thermal Mitigation.

Mr. Meinhardt. The major sources of thermal effluents at the Savannah River Plant are the cooling water discharges from the production reactors, C and K, and the D Area coal-fired powerhouse. Although the production reactors have operated for approximately 30 years, at present, the discharge from these facilities do not meet the temperature limits prescribed by the State of South Carolina's standards. The Department of Energy has developed this project to enable operations to comply with these standards and to meet the requirements of a Consent Order between DOE and the State of South Carolina's Department of Health and Environmental Control.

THERMAL MITIGATION AT SAVANNAH RIVER

Mr. Bevill. What is the total cost of project 87-D-156?

Mr. Meinhardt. The total estimated project cost for project 87-D-156 is $109 million.

THERMAL MITIGATION AT SAVANNAH RIVER

Mr. Bevill. What cost/benefit analysis has been performed on requirements of project 87-D-156?

Mr. Meinhardt. The Department of Energy has performed a cost benefit study and has published the results which describe the systems which can best implement compliance with the water quality standards. As a result, DOE is considering the construction and operation of once-through cooling towers for C and K Reactors and implementation of increased coolant flow with mixing for the D Area powerhouse.

THERMAL MITIGATION AT SAVANNAH RIVER

Mr. Bevill. What alternative measures have been analyzed to the use of these cooling towers?

Mr. Meinhardt. The Department of Energy has examined alternatives which improve on the existing situation and which either meet or fail to meet the full requirements of the existing standards. Of the alternatives which meet the standards, cooling lakes, recirculating cooling towers, once-through cooling towers, and combinations of these have been evaluated. Of the alternatives which would significantly improve thermal discharges but which would not meet the standards, DOE has examined spray canals, lakes, energy recovery systems, and combinations of these.

THERMAL MITIGATION AT SAVANNAH RIVER

Mr. Bevill. What is the environmental impact on the Savannah River site of having the proposed cooling towers?

Mr. Meinhardt. The no-action alternative would result in the continuation of thermal discharge effects. The high water temperatures would continue as it has over the last 30 years to prevent fish, such as minnows, darters, sunfish, and blueback herring from using effected waterways for foraging or spawning and would not permit compliance with the State of South Carolina's water standards. Habitat value for the endangered American alligator and wood stork would remain low. There would be no impacts on air quality or noise or on archeological sites with this alternative.

THERMAL MITIGATION AT SAVANNAH RIVER

Mr. Bevill. What is the environmental impact of the Savannah River reservation of not having the proposed cooling towers?

Mr. Meinhardt. The proposed project will require 1,125 to 1,600 acres of land. This includes flooding of 700 to 815 acres of upland hardwoods and pines under the new holding ponds. The equivalent of 50,000 barrels of crude oil will be consumed each year to power the fans and pumps to be installed. There will also be increased fogging due to the moisture discharged into the atmosphere by the towers.

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT UNBOLIGATED BALANCES

Mr. Bevill. The budget justification refers to the use of unobligated balances from other activities. Does this represent a reprogramming action?

Mr. Meinhardt. Yes sir. We have proposed as a part of our FY 1987 budget request that funds from prior year construction projects be made available in FY 1987 to meet both ongoing and new activities.

Mr. Bevill. Does the Department propose to submit a formal reprogramming request in addition to that budget justification?

Mr. Meinhardt. We had hoped that by identifying the unobligated balances and showing where these funds would be used in FY 1987 in our budget narrative, that we would not be required to submit a formal request. However, we will work with the Subcommittee staff and provide the formal request if required.

WASTE ISOLATION PILOT PLANT STATUS

Mr. Bevill. What is the status of the Waste Isolation Pilot Plant project?

Mr. Meinhardt. Construction of the Waste Isolation Pilot Plant is progressing exceptionally well; it is about 80 percent completed now. Both underground and above-ground facilities are under construction, and we expect construction completion in early FY 1987. The availability of prior year construction funds will meet our FY 1986 and FY 1987 needs; therefore, no construction funds have been requested for these years. However, construction funds will be required in FY 1988.

Mr. Bevill. What is the current position of the State of New Mexico with regard to construction of the Waste Isolation Pilot Plant?

Mr. Meinhardt. Our relationship with the State of New Mexico is improving. Issues of concern to the State are being actively negotiated within the framework of the Consultation and Cooperation Agreement. One primary State concern has been the mission of the Waste Isolation Pilot Plant, WIPP. The Department of Energy's mission is limited to the demonstration of transuranic waste disposal and experiments with high-level waste. We want to emphasize that the WIPP facility is not being designed for permanent disposal of high-level waste. We recently signed an amendment to the Consultation and Cooperation Agreement, which included the WIPP mission as described above; and copies were provided to the appropriate committees of Congress for their information.

DEFENSE WASTE PROCESSING FACILITY PREOPERATIONAL ACTIVITIES

Mr. Bevill. Please describe your preoperational activities in support of Defense Waste Processing Facility at Savannah River.

Mr. Meinhardt. The Defense Waste Processing Facility, DWPF, will immobilize the salt and sludge, now in interim storage in tanks, in preparation for its disposal. The DWPF consists of two plants - the vitrification plant and the saltstone plant. The vitrification plant, which will begin operation in 1990, will solidify the sludge in borosilicate glass for disposal offsite at a Federal repositiory. The saltstone plant, which will begin operation in mid-1988, will incorporate decontaminated salt in concrete.

The preoperational activities are necessary to prepare for the operation of these plants. Operating personnel must be trained and operating procedures must be written and tested. Equipment must be inspected and calibrated. Chemicals, materials, and parts must be ordered and stockpiled. Subsystems are checked as installed, and nonradioactive chemical process checkouts are carried out to thoroughly verify operability. Analytical methods are selected and tested. Emergency preparedness procedures are prepared and tested. The sequential turnover of subprojects from construction to operations will culminate in a smooth transition to radioactive DWPF operations.

DEFENSE WASTE PROCESSING FACILITY PREOPERATIONAL COSTS

Mr. Bevill. What is the total cost in FY 1987 of this preoperational support of Defense Waste Processing Facility?

Mr. Meinhardt. There are three areas of preoperational support activity, i.e., saltstone operations support, vitrification operations support, and laboratory operations support. The funding breakdown is shown in a table, which I would like to insert in the record.

(The information follows:)

FISCAL YEAR 1987 DWPF PREOPERATIONAL COSTS
(DOLLARS IN THOUSANDS)

	Operating	Capital Equipment	GPP	Total
Saltstone	$ 7,570	$ 200	$ 100	$ 7,870
Vitrification	15,450	820	270	16,540
Laboratory	3,080	370	130	3,580
Total	$ 26,100	$ 1,390	$ 500	$ 27,990

DEFENSE WASTE SALTSTONE FACILITY

Mr. Bevill. Please describe the schedule for startup of the Defense Waste Processing saltstone facility.

Mr. Meinhardt. The disposal and processing environmental permits for Defense Waste Processing Facility saltstone are scheduled to be received from the South Carolina Department of Health and Environmental Control in September 1986. Construction on the processing facility is expected to begin in October, followed in November with the construction of disposal facilities. After a 19-month construction period and 3-month facility checkout, saltstone production is expected to begin by mid 1988.

DEFENSE WASTE PROCESSING FACILITY STATUS

Mr. Bevill. Please describe the status of the construction of the Defense Waste Processing Facility at Savannah River.

Mr. Meinhardt. Engineering design is 86 percent complete, procurement is 89 percent complete, and physical construction is 27 percent complete. Approximately 1600 construction workers are onsite. About 50 percent of the concrete has been placed for the main processing facility. Mechanical and electrical work is also underway at the first and second levels of the facility. Twenty-seven of 38 contracts for support facilities have been awarded with 10 of the contracts completed. To date, 329 purchase orders have been placed for material and equipment, with delivery complete on 73 of the orders. The overall project is on schedule for startup in first quarter FY 1990.

HANFORD VITRIFICATION FACILITY

Mr. Bevill. What are the Department's plans to construct a similar facility at Richland, Washington?

Mr. Meinhardt. Our plan is to initiate a line item project at Richland, the Hanford Waste Vitrification Plant, HWVP, in FY 1988. Key milestones in the proposed schedule are initiate design in FY 1988, start construction in FY 1989, complete construction in FY 1995, and start hot operation in FY 1996.

HWVP serves the same purpose at Richland as the Defense Waste Processing Facility under construction at Savannah River. There are two major differences in the facilities. The first is that HWVP does not include an integral cementation plant for incorporating decontaminated salt solution in concrete for disposal as low-level waste. At Richland, a portable grout plant is being built to serve that purpose. The other major difference is that at Richland, an existing facility, B Plant, is being modified to prepare feed streams for vitrification. The similar requirements at Savannah River are met by processing waste streams in specially equipped waste tanks.

HANFORD WASTE MANAGEMENT

Mr. Bevill. Describe the status of the Hanford Site Defense Waste Environmental Impact Statement.

Mr. Meinhardt. The Draft Hanford Site Defense Waste Environmental Impact Statement, EIS, has been approved for publication and will be issued in April 1986. The draft EIS describes the environmental impacts associated with the long-term disposal alternatives for Hanford defense high-level, transuranic, and tank wastes. The draft EIS will be published and forwarded with a request to the Environmental Protection Agency for a Federal Register Notice of public availability. Comments on the draft EIS received at the public hearings in the Northwest and in writing during the 120-day comment period will be used in finalizing the EIS, which is expected to be issued in April 1987 and will be followed by a Record of Decision in May 1987.

WASTE ISOLATION PILOT PLANT COSTS

Mr. Bevill. What is the total FY 1986 and FY 1987 operating cost of the WIPP project?

Mr. Meinhardt. The operating costs for the WIPP projects will be approximately $24,000,000 in FY 1986 and $39,100,000 in FY 1987. It will continue to increase as startup and full-scale operations occur.

Mr. Bevill. Describe the need to increase operating funds as you transition the WIPP site from construction to operations.

Mr. Meinhardt. The increases in operating funds are due to escalation and the transfer of certain activities from construction line item funding to operating; for example, Southwest Public Power charges were paid with construction funds during construction but will be paid with operating funds during the transition and thereafter. As surface facilities are completed, they will be turned over to operating personnel for checkout. In addition, other functions, such as security and environmental support, will be transferred to operating, with the completion of surface construction in early FY 1987.

SAVANNAH RIVER BURIAL GROUND

Mr. Bevill. Describe the effort to construct a new low-level waste burial ground at Savannah River.

Mr. Meinhardt. The new burial ground, which will cost $14,500,000, will provide an additional 100 acres for near-surface disposal of low-level waste. It is expected to be available for disposal operations late in FY 1988 and will meet the needs of Savannah River for low-level waste disposal through 2008. The NEPA documentation supporting this project is scheduled to be completed in June 1987. The facility will have provisions for shallow land burial trenches for bulky equipment; engineered trenches for disposal of low-level waste packaged in steel boxes; greater confinement engineered trenches for waste requiring greater isolation to assure control of radionuclide migration; and greater confinement boreholes 9 feet in diameter and 30 feet or more deep for disposal of waste which poses a worker radiation exposure problem if not completely isolated.

HANFORD WASTE TANK PROJECT

Mr. Bevill. Describe the requirements for project 87-D-174 (AQ Tank Farm) at Richland.

Mr. Meinhardt. Construction of the AQ Tank Farm, which includes four new tanks and conversion of a low-heat tank to high-heat, on the Hanford reservation is necessary to assure the availability of tank space for the continued safe storage of waste from the processing of N Reactor fuel. Because of increased production, actual high-level waste, HLW, generation has exceeded earlier forecasts by up to 4 million gallons over 3 years. Without this project, nuclear materials production operations will be impacted. Current waste volume projections for newly generated HLW indicate the need for additional high heat storage capacity by 1993. This, in turn, dictates the need to begin design and construction in FY 1987. Prior to the decision to request additional tanks, all reasonable alternatives for expanding existing waste storage capacity, commensurate with production requirements, were implemented.

IDAHO CALCINED SOLIDS STORAGE

Mr. Bevill. Describe the status of construction of the Calcined Solids Storage at Idaho.

Mr. Meinhardt. Construction of the first set of Calcined Solids Storage Bins was completed at the Idaho National Engineering Laboratory in 1958. Since then, four sets of bins have been filled, and the 5th set is in the process of being filled. Construction of the 6th set was completed in 1985 and is ready for operation. Construction of the 7th set of bins is on schedule. Title II design review is in progress, and the construction package will be issued in April 1986. Completion of the 7th set of bins is scheduled for FY 1989. New calcined solids storage bins will be required at Idaho about every 3-4 years until facilities for the immobilization of the high-level waste are available.

NEW HIGH-LEVEL WASTE TANKS

Mr. Bevill. What new tanks are funded at each site, and what is the requirement for new tanks beyond those funded to date?.

Mr. Meinhardt. High-level waste is managed at Hanford, Idaho, and Savannah River.

At Hanford, funding for the eight FY 1983 tanks, now under construction, was completed in FY 1985. Funding for four new waste storage tanks is requested in FY 1987 under Project 87-D-174. In order to assure continued support for the Department's nuclear materials production program and alleviate a critical shortage of available tank space, a funding request for four additional high-level waste storage tanks is planned for FY 1988. Thereafter, new tanks will be required about every 4 years until a facility for the processing and immobilization of waste stored in tanks is available.

At Idaho, the present tank capacity is considered to be adequate to meet future requirements because the backlog of liquid waste is routinely calcined to a dry granular solid for storage in bins. New Calcined Solids Storage Facilities are required about every 3 to 4 years.

At Savannah River, it is not anticipated that any additional tanks will be required since the Defense Waste Processing Facility, to immobilize waste removed from tanks and prepare it for disposal, is expected to be in operation in 1990.

HIGH-LEVEL WASTE TANKS

Mr. Bevill. What problems do you still encounter with leaking tanks at each site?.

Mr. Meinhardt. None of the tanks or calcined solids storage bins at Idaho or the new high-integrity double-shell tanks at Hanford or Savannah River has leaked.

Of the 149 old single-shell tanks at Hanford, 7 are classified as "assumed leakers." This is a conservative term that is defined as "a tank for which there is an indication of a breach of integrity, exhibits surveillance parameter changes that exceed stated criteria limits, and results in a less than 95 percent confidence that it is sound." Of the remaining 142 old single-shell tanks, 49 are sound, deactivated tanks and 93 are classified as "stabilized," meaning the pumpable liquid has been removed. Pumpable liquid is being removed from the old tanks and transferred to new high-integrity double-shell tanks. This is part of the Stabilization and Isolation program, which is planning to complete the stabilization and isolation of all 149 old tanks in 1992.

No significant amount of radioactive waste has been released to the environment from old waste tanks at Savannah River. There is concern about leakage because of the age, condition, and design of the 24 old waste tanks, which were built between 1952 and 1961. There are eight old single-shell tanks, one of which has a crack in the wall above the liquid level. There has been a small amount of in-leakage of ground water through the crack. The other 16 old tanks are of "cup-and-saucer" design, which means the tank sits in a 5-foot-high secondary containment. There has been leakage into the secondary containment in nine of these tanks. In one of them, a leak of about 25 gallons did occur from the secondary containment to the surrounding soil in 1960. Thorough and continuing monitoring and tests have shown that the waste is confined to the immediate area of the tank. In all other cases, the waste has been collected from the secondary containment and returned to the tanks. Waste from the old tanks is being transferred to new high-integrity double-shell tanks. Waste transfer will be completed from all the old tanks in FY 1994.

SPACE NUCLEAR REACTORS

Mr. Fazio. Commercial nuclear power development has used the same basic design for plants rated from tens of megawatts electric (MWe) to over 1000 MWe capacity. In contrast, the space program is embarking on two (or more) fundamentally different designs. The SP-100 project envisions a reactor power plant with a capacity in the range of 100 kWe to 1 MWe. The multi-megawatt project involves the development of a reactor power plant with a capacity range of tens to hundreds of MWe. Describe any inherent technical obstacles that would prevent the use of a single basic design to provide the range of electrical power requirements for the SDI systems. If there are no such obstacles, explain the bases for the decision to proceed with both the SP-100 and the multi-megawatt projects.

Mr. Vaughan. Space reactor systems, in contrast to terrestrial systems, must be launched into space and they must operate unattended in the vacuum environment of space. The combination of launch weight limits and space environment requires major reductions in size and weight, per unit of power capacity, as the power level rises. Without these reductions, the number of required shuttle or other booster launches would drive the overall system costs up on a linear basis if the same technology was used at all power levels. Therefore, the space reactor program has targeted on the SP-100 reactor in the power range of up to about one megawatt using reactor fuels and materials technology that is an outgrowth of the space reactor programs of the 1960's and 1970's. For the higher power levels, the tens of megawatts of continuous power or even in the hundreds of megawatts for short bursts, new and innovative concepts and technologies must be developed if the overall power system weight and size is to remain manageable. Otherwise, the SDI program could find itself in the position of not having a power system that could be used without resorting to 10 to 100 or more shuttle launches and complicated in-space assembly of reactor subcomponents and subsystems.

Mr. Fazio. How many different designs are now under consideration for the multimegawatt project? How many will be funded through a ground prototype demonstration phase?

Mr. Vaughan. Because of this need for new and innovative concepts, the Multimegawatt space reactor program has solicited concept and technology ideas from both the national laboratories and industry. Seven laboratories have responded with at least one concept each, and several have proposed more than one approach. Industry proposals have also been received and are under formal evaluation. It is anticipated that five to seven industry concepts will be evaluated.

The program goal is to advance the basic technologies and verify basic feasibility by 1991 so that at least one concept could be carried forward into engineering development and ground demonstration. A decision on the future direction of the SDI program will determine the number of ground demonstration tests, but it would probably be only one or possibly two.

SP-100 DESIGN

Mr. Fazio. With regard to the design chosen for SP-100, what is the range of electrical power that will be available using this design?

Mr. Vaughan. On August 1, 1985, a compact, high temperature, liquid-metal cooled, fast spectrum reactor--which provides its heat to out-of-core thermoelectric materials for direct electrical power production--was selected as the concept for ground engineering development and demonstration by 1991. This selected design concept and its associated technology can span the electrical power range up to about one megawatt electric. The reference design basis for the ground engineering test has been established at 300 kWe.

Mr. Fazio. What specific aspects of the SP-100 design prevent scaling up to higher electrical power levels?

Mr. Vaughan. Thermoelectric power conversion has been successfully used in space--the process is very reliable since it involves static or direct energy conversion with no moving parts. However, the thermoelectric process is limited in its efficiency, converting about 4 to 7 percent of the available heat to electricity. Because of this limiting efficiency, thermoelectrics becomes less and less attractive at higher and higher electrical power levels. For SP-100, this limit is about one megawatt electric. However, there are ways to increase the electrical power output of an SP-100 system beyond 1 megawatt electric. The easiest way is to utilize a more efficient power conversion process tied to the same reactor heat source. Examples include dynamic energy conversion machines such as

Brayton or Stirling engines which have efficiencies approaching 20 and 25 percent, respectively. By replacing the thermoelectrics with dynamic machinery, an SP-100 power system could extend its useful electrical power output into the 3 to 5 megawatt electric power regime. However, the introduction of moving machinery presents additional technical and system reliability problems. Such advanced systems are being investigated by NASA within the SP-100 program as part of their advanced aerospace technology effort.

Mr. Fazio. Describe the ground test phase planned to be conducted at Hanford. What are the goals, schedule, and total projected cost of this test phase?

Mr. Vaughan. As part of the joint DOD/DOE/NASA SP-100 Phase II Program--what we term the Technology Flight Readiness Phase--DOE is responsible for Ground Engineering System Development and Demonstration during the period FY 1986 to FY 1991. This effort is focused on demonstrating the performance, safety, dependability, lifetime, manufacturability, and readiness of the technology for flight use. Performance, safety, and lifetime/reliability validation testing must be conducted, and to achieve the desired results, a reactor ground test is required. On November 21, 1985, the Plutonium Recycle Test Reactor containment building at the Hanford Engineering Development Laboratory near Richland, Washington, was selected as the preferred site for the SP-100 ground reactor test from among five existing candidate DOE test sites. The ground reactor test will be conducted in a simulated space environment; therefore, a vacuum chamber will be required.

Planning for the ground reactor test began in FY 1986. Design activities will continue through FY 1987, as will safety and environmental analyses and documentation. Upon receipt of all required environmental approvals in FY 1988, modifications at the test site will begin. The test site facility modifications are scheduled to be completed in FY 1989 and will be immediately followed by a readiness review and full facility qualification for operation. Upon receipt of all safety approvals, the test reactor can be installed and checked out. This will be followed by the reactor ground test operations. The actual test is scheduled to begin in September 1990 and continue through FY 1991. Thus, the activities associated with the reactor test site run from FY 1986 through FY 1991.

The cost of these activities, including planning, design, safety/environmental analyses and documentation, facility modification, and operations and maintenance are estimated at $50 million over the period FY 1986 to FY 1991.

This reactor ground test, along with other separate component, subsystem, and integrated subsystems tests, will demonstrate SP-100 technology readiness for flight by 1991 at a total estimated cost of about $450-500 million. The project is now being rebaselined, as planned in Phase II, and total cost is, therefore, subject to revision.

Mr. Fazio. Can all aspects of the design be tested on the ground or will tests in orbit be required?

Mr. Vaughan. Although the ground engineering system development and demonstration effort will permit users to confidently select the SP-100 technology and system, a system is not totally proven--that is to say, flight qualified--until it is actually flown and used in space. The Strategic Defense Initiative Organization recognizes this and plans to conduct a flight demonstration of SP-100 driving an electric propulsion unit or units in the early 1990's to satisfy the requirement for hardware flight qualification.

SDI PAYLOADS

Mr. Fazio. Identify the SDI payloads to be powered by the SP-100 reactor power plant and the multi-megawatt power plant. What are the voltage and current requirements for each payload? At what voltage and current will the SP-100 and MMW power plants generate electricity? Is the equipment needed to change the voltage and current generated to the voltage and current required by each payload available now or must new equipment be developed?

Mr. Vaughan. The reference SP-100 mission is the 1993 flight readiness demonstration of a 300 kilowatt electric reactor to power an orbital maneuvering unit using electric propulsion. The SDI applications for SP-100 include base or housekeeping loads for SDI platforms to power surveillance, target acquisition, discrimination, tracking, countermeasures, communication, computing, battle management, and damage assessment. The SP-100 electric output is 200 volts DC and power conditioning will be provided to suit the various uses. The power conditioning and control technology required for this application is currently available and will be engineered into the SP-100 flight system design during the Ground Engineering System phase of the SP-100 Program. Technology development will continue in this area; however, under the NASA element of the ground engineering system phase, we will seek to make improvements in the size, weight, and radiation hardness features of the power conditioning and control subsystem.

The electrical requirements for the multimegawatt power units have not been fixed yet. Architecture studies--weapons deployment scenarios--are being made this year. From these studies, the functional requirements including power conditioning will be defined. Preliminary requirements are available and are being used to provide a basis for ongoing multimegawatt concept studies.

Mr. Fazio. What are the radiation dose rate and integrated dose limits for each payload?

Mr. Vaughan. The payload-dictated radiation protection or shielding requirements for SP-100 are to have no more than 1 times 10 to the 13 neutrons per square centimeter for neutrons having less than 1 MEV energy and no more than 5 times 10 to the fifth rads of gamma radiation during the 7-year operating duty life.

Mr. Fazio. What materials will be used for the radiation shield in the SP-100 power plant?

Mr. Vaughan. Neutron shielding such as lithium hydride and heavy metal gamma shielding will be used. Separation between the powerplant and payload will also contribute. Similar requirements are being set for multimegawatt powerplants as a part of the current concept definition process.

POWER REQUIREMENTS FOR SDI

Mr. Fazio. George Hess, director of the SDI Office for Survivability, Lethality and Key Technologies, has stated that the power requirements for SDI cannot realistically be supplied with anything other than some type of nuclear reactor system and, therefore, "sooner or later we're going to have to face the problem of public acceptance of the presence of nuclear reactors in space." (IEEE SPECTRUM, September 1985, p. 54.) Is it correct that except for ground-based aspects of SDI, nuclear reactors are the only realistic power source for SDI systems? If so, is it not misleading to refer to SDI as a "non-nuclear" shield?

Mr. Vaughan. The solar and chemical options, which are being studied in the overall SDI power program along with nuclear power, have problems with size and vulnerability in the case of solar power, and tenuous logistics in the case of chemicals. Nuclear reactors can provide SDI with very versatile power sources. If not the only realistic power source, nuclear certainly appears to have some significant advantages over non-nuclear sources. The reference to SDI as a "non-nuclear shield" refers to the absence of nuclear weapons in space, not to the use or absence of nuclear energy sources to power various SDI functions.

Mr. Fazio. Describe how and when the problem of public acceptance of nuclear reactors orbiting the earth is to be addressed and resolved. Does "public acceptance" refer only to U.S. citizens or will public acceptance in other countries be sought as well? If so, describe the program for facing this problem in other nations.

Mr. Vaughan. The key to public acceptance of having nuclear reactors in space is safety. Safety has always been and will continue to be a paramount consideration in the selection and design of nuclear space power systems. Public acceptance includes acceptance in other countries as well as the United States. In 1979, the United Nations formed a Committee for Peaceful Use of Outer Space after the reentry of the Soviet Cosmos 954 reactor. This UN Committee has both scientific and legal subcommittees. The basis of UN agreements in this area is to operate on a consensus basis. All countries are represented and the use of reactors in space has been agreed to, provided safety criteria guidelines are met and with the proviso that selection of nuclear power systems would be on the basis of technical merit. The legal requirements concern notification through the U. N. of impending operations and malfunctions.

Mr. Fazio. If public acceptance of nuclear reactors orbiting the earth is not forthcoming, what plans are there for proceeding with SDI?

Mr. Vaughan. The U.S. expects to be able to operate its contemplated nuclear space power systems in a "nuclear safe" high orbit, and we expect to be able to meet the criteria and guidelines that have been established. As mentioned above, SDI is studying both solar and chemical power sources, and while there are some recognized problems with them, it is conceivable that workable SDI functions can be met with non-nuclear power sources with some weight penalties. At this stage all possibilities are being considered. DOE provides power sources to meet customer requirements and assessment of the safety risks versus benefits. The ultimate decision on whether to proceed under any given set of circumstances would be made by our customer, DOD, and others in the Administration.

POTENTIAL MATERIALS PROBLEMS FOR SP-100

Mr. Fazio. Commercial nuclear reactors continue to experience corrosion, radiation embrittlement and other materials problems. Is there any objective basis for believing that space reactors will not experience similar materials problems? How much time and money are currently budgeted in the SP-100 project to overcome possible materials problems?

Mr. Vaughan. Space reactors are designed to operate at higher temperatures than commercial reactors. The need to operate reactors in space at high temperatures requires the use of refractory alloys for structural components whereas commercial reactors principally use stainless steel alloys. Also, space reactors use liquid metals as a reactor coolant and heat transfer fluid, whereas water is used in most commercial reactors. The combination of refractory alloys and liquid metal coolant in space reactors creates a different environment than that encountered by commercial reactors. This difference is augmented by the design lifetimes of the different applications--ten years for a space reactor system, and forty years for a commercial nuclear powerplant. Phase I of the SP-100 Program demonstrated the technical feasibility of using the proposed materials. In fact, the high operating temperature reduces irradiation embrittlement and creep problems.

The SP-100 Ground Engineering System program is designed to demonstrate the space reactor technology. This demonstration will include lifetime and reliability capabilities. An integral part of this effort is confirmatory testing and the buildup of an engineering database to demonstrate that the materials are capable of meeting the design lifetime requirements of the reactor system at the specified operating conditions.

The funds to be spent strictly on materials development in FY 1986, including management audit of the development activities, are approximately $5 million. Over the period FY 1987 to FY 1991, funds of $15.5 million are planned.

DESIGN LIFTIMES

Mr. Fazio. What are the design lifetimes of the SP-100 and MMW reactors? Will the design include provisions for servicing or repair of the space nuclear power plant and its payload or will the entire satellite have to be replaced in the event of a failure that disables either the power plant or the payload?

Mr. Vaughan. The SP-100 space nuclear reactor has design lifetime requirements of 7 years of full power operation and 10 years overall lifetime. The overall lifetime requirements for multimegawatt systems would be similar to that of SP-100 for defense applications, but multimegawatt operational requirements would be different depending on the mode of operations required--continuous, alert, or burst.

The approach to maintain and repair space nuclear power systems will likely be unique to each type of potential space mission. Factors to consider would include reactor power level, time in operation, type of orbit, proximity of humans, and the useful life of the reactor. The strategy for servicing a reactor will be developed along with the mission requirements for potential applications.

Mr. Fazio. Describe the provisions, if any, for an independent evaluation of the safety of the proposed designs for the SP-100 and MMW reactor power plants. Who selects the people to perform the independent safety evaluation?

Mr. Vaughan. The selection of the chairman of the SP-100 Project Safety Advisory Committee is made by the Jet Propulsion Laboratory project manager; the chairman, in turn, establishes the committee membership. Currently, the SP-100 Project SAC is chaired by an independent safety consultant, Duane Sewell, who has an extensive safety background and experience base.

The Safety Advisory Committee was established at the outset of the SP-100 project to provide an independent assessment of all SP-100 project activities with particular emphasis on safety, safeguards, and environmental protection. The SP-100 Safety Advisory Committee provides its advice and recommendations to the SP-100 Project Manager who, in turn, takes action to resolve areas identified by the Safety Advisory Committee.

Mr. Fazio. What are the affiliations and qualifications of the individuals currently serving in this capacity?

Mr. Vaughan. The SP-100 Safety Advisory Committee membership is composed of eight safety experts, all of whom are independent of the program and from consulting firms and organizations. These include the California Institute of Technology; the University of California at Los

Angeles; NASA's Johnson Space Center; the U.S. Air Force; the Lawrence Livermore National Laboratory; and the Sandia National Laboratory.

Mr. Fazio. Are their safety findings binding on or merely recommendations to SDI? If the latter, who makes the final decisions on dispositions of the safety recommendations?

Mr. Vaughan. The findings of the Safety Advisory Committee are primarily of the status of advice or recommendations, but recognizing the seniority of the Committee and the experience of its members, both the project manager and government officials in the Program Office attach considerable significance to the Safety Advisory Committee's findings.

Let me also note that a second independent group--the Interagency Nuclear Safety Review Panel--also analyzes space reactor safety, and its recommendations are carefully considered by the Office of Science and Technology Policy, on behalf of the White House, before any space nuclear launch can be approved.

DESIGN GOALS OF SPACE NUCLEAR REACTORS

Mr. Fazio. Compare the design and performance of the nuclear and non-nuclear electric power systems previously flown in space--either earth orbit or interplanetary--by the U.S. with the design goals of the SP-100 and Multimegawatt projects in the following respects--first, percent efficiency in converting heat or light energy to electrical power; second, watts of electrical power; third, design life, in both years and watt-hours; fourth, specific energy in terms of kilowatt hours per kilogram; fifth, maximum voltage and current requirements of the payload; sixth, cost of launching the power system in terms of dollars per kilogram; seventh, probability and confidence level of the power source functioning properly for the design lifetime; eighth, maximum nuclear radiation--both neutron and gamma--dose rate and integrated dose limits of the power system and its payload; and, ninth, the size and weight of the equipment used to radiate waste heat to space.

Mr. Vaughan. I will provide this information to you and the Subcommittee by separate correspondence.

Mr. Fazio. Given the present plans for the SDI systems, how many nuclear reactors (both operating and spent) will be orbiting the earth as a function of time from 1990 to the year 2050?

Mr. Vaughan. The configuration of space based platforms for the Strategic Defense Initiative system is being addressed as part of several system architecture studies by the Strategic Defense Initiative Organization. Ten contracts were initially let during Phase I of this effort and five contracts were continued into the current Phase II effort. These studies will establish the number and types of space based platforms that may be used for an SDI system. In addition, the SDIO will initiate power systems architecture studies to relate the potential space platforms to candidate power systems and to evaluate the technical tradeoffs of these different power systems, both nuclear and non-nuclear. The potential number of space reactors required to support the SDI would evolve from these studies.

The SDIO program is directed toward establishing the feasibility of technical concepts by 1991, so that a decision on the direction that the SDI program should take can be made. This decision will further define the potential number of space reactors which will be required to support the SDI. It is not planned to launch any space reactors before 1993.

Mr. Fazio. What will be done with the nuclear reactors used to power SDI at the end of their useful life?

Mr. Vaughan. Space reactor power systems are designed to be permanently and irreversibly shut down at the end of their useful life. This enables the radioactivity produced during operation to decay before the reactors could potentially begin to re-enter the earth's atmosphere. It is intended that after operation, a spent, shut down reactor will be transferred or boosted either to a much higher orbit, so that re-entry will be delayed on the order of thousands of years, or out of earth orbit entirely. It is also possible that a reactor's orbit would be allowed to decay sufficiently to permit potential future planned retrieval involving the reactor's return to earth in a controlled and positive manner. Even though such actions can and, in some cases, will be taken to preclude re-entry of an operated, radioactive space reactor, the system would still be specifically designed for re-entry so that potential hazards from any hypothetical, inadvertent, or unplanned re-entry will not pose a threat to the public or the environment. Such design approaches are currently being investigated under DOE's Space Reactor Program.

Mr. Fazio. If the SDI nuclear reactors are to be left in orbit at the end of their useful life, will they remain in their original orbit or will they be boosted into a higher orbit? How long will the spent reactors remain in orbit?

Mr. Vaughan. We intend to preclude re-entry of an operated and, thus, radioactively "hot" space reactor.

Retention in orbit is the primary means of accomplishing this. Methods include transferring or boosting the system to a high, long-lived orbit which provides adequate time for decay of the on-board radioactive materials; transferring or boosting the system out of earth orbit entirely; or future, planned retrieval and return of the system to earth in a controlled manner after sufficient decay has occurred.

Depending upon the orbit in which a space reactor is operated and that orbit's lifetime, the reactor system may or may not require transfer or boosting to a higher orbit or entirely out of earth orbit. That is, if the spent reactor is already in a long-lived stable orbit--as is the case for the SNAP-10A reactor system launched in 1965, which is in a 3,000-year orbit--its further transfer or boost is not required. However, if a reactor system is operated in a lower orbit, which is currently not planned and where sufficient decay time is not available, the system would require transfer or boost to a long-lived orbit, out of earth orbit entirely, or perhaps retrieved and returned to earth after decay.

CONSEQUENCES OF REENTRY

Mr. Fazio. What are the range of possible consequences to the public and the environment when the reactors and their fission products return to earth? Are there any possible failure modes--for example, leaks of pressurized fluids or gases, fires, or other chemical reactions--that could result in premature return to earth?

Mr. Vaughan. Even though we intend to preclude re-entry of an operated and radioactively "hot" space reactor, provisions must be made during design to accommodate re-entry in a safe manner should it occur--by whatever means. A variety of design approaches focused at this issue are currently being investigated in our space reactor programs. As part of this effort, the principle and paramount driving criteria is to preclude or prevent the interaction of any radioactive materials with the earth's population and environment. Two specific design approaches include, first, designing the system to totally burnup at high altitude during re-entry and, second, designing the system to survive re-entry intact with any radioactivity contained and inaccessible. Further study of these and other potential design approaches to safely accommodate an inadvertent or unplanned re-entry must obviously continue further.

Inadvertent or unplanned re-entry can only occur as a result of three nominal events--first, natural system orbital lifetime degradation due to drag in space; second, failure to boost; or, third, a misdirected burn during an attempt to boost. The first of these occurs naturally over time and the orbital lifetime is determined by such things as initial altitude, solar activity, system ballistic coefficient and drag. The important point here is to take action to alter this course if a hazard could be posed upon eventual re-entry--the spectrum of potential intervention actions have already been addressed. In the second and third cases, it is important to know if this is an initial boost to the planned stable operational orbit or whether it is an intervention action to preclude re-entry. If it is the former, no radiation hazard is posed since the reactor system has not been operated; thus no radioactive fission products are available for release. If it is the latter, however, a radioactive inventory is present and the response of the system during re-entry is important. One option of considerable merit is to use electric propulsion for transfer or boost instead of chemical thrust boosters.

In summary, we do not plan to allow operated space reactors that are radioactively "hot" to re-enter the earth's atmosphere. In particular, we currently do not plan to operate them in low earth orbits with lifetimes less than about 1,000 years. Nevertheless, we must design them to safely accommodate inadvertent or unplanned re-entry. This effort is driven by criteria to ensure protection of the earth's population and environment.

Mr. Fazio. What consideration has been given to the effect of leaving reactors in orbit at the end of their useful life on future space projects other than the SDI?

Mr. Vaughan. The end of mission disposition of reactors used for non-SDI space projects is not expected to receive different consideration than that given to SDI space projects which use nuclear reactor power sources. The general guideline for all space nuclear reactor applications is that there will be a safe disposal of the reactor at the end of the mission.

The manner of disposal will depend on the orbit of the reactor and several means of disposal have been identified and are being examined further. For example, reactor shutdown and remain in same orbit, reactor shutdown and transfer orbits, transfer to a solar orbit, and controlled re-entry are possible choices depending on the mission. The best approach for each potential mission has not yet been identified.

Our approach to reactor safety and disposal will be developed in parallel with other advances in the technology of space nuclear reactors. Although these approaches are in an evolutionary stage, the general policy is that if the mission is not considered safe or if the reactor cannot be safely disposed of, it will not be deployed.

SAFETY FEATURES

Mr. Fazio. Describe the safety features to be incorporated in the SP-100 design to safeguard the public and the environment in the event of malfunctions that result in a fire or explosion of the launch vehicles on the pad or an abort prior to achieving orbit. Describe the worst conditions--for example, overpressure, impulse, or temperature--that the reactor will be subjected to in the event of a fire or explosion of the launch vehicle on the pad.

Mr. Vaughan. Space reactors can be designed to be completely safe during launch and ascent. Safety analyses prior to launch include consideration of a variety of any potential accidents that might occur during those mission phases. The principle means to assure safety is through the identification and stringent application and use of design and operational safety features.

Probably the single most important safety feature for space reactors is that they can be and are launched in a radioactively "cold and clean" condition. That is, space reactor power operations are precluded prior to the system being placed in a stable operational orbit or flight path. Consequently, no inventory of radioactive fission products is available for release during launch or ascent. In addition, the reactor's uranium fuel is unirradiated and, thus, poses no intrinsic hazard. Although no radiologically hazardous materials or source terms exist on-board during launch or ascent, reactor subcriticality must be assured to keep things that way. In this regard, two additional features are provided to preclude reactor criticality. The first feature is that the reactor is required to have two independent shutdown systems, either of which is capable alone of maintaining subcriticality and both of which must be physically locked in their shutdown positions during ground transport and handling, launch, ascent, and up through their physical unlocking just prior to the system's boost to its final stable operational orbit or flight path. One of these shutdown systems consists of rotating control drums located around the periphery of the reactor. The other shutdown system is comprised of in-core safety rods which, when they are locked in-core, are an integral part of the core structure.

Secondly, the two independent shutdown systems are each designed to provide an excessive shutdown margin in order to ensure that the reactor will remain in a subcritical condition under any launch or ascent accident that may occur; this includes the most severe fire, explosion, projectile, impact, water immersion and flooding accident environments that are considered possible for the space shuttle. In fact, it includes all levels of damage and/or destruction that are plausible. That is, the system can be damaged, and even totally destroyed, and criticality will not result. For one special environment involving water immersion and flooding in an accident, spectral shift absorbers are physically built into the core which cannot be selectively removed. These do not detract from normal operation of a fast spectrum reactor but do act to absorb thermal or slow neutrons very effectively should the system be damaged, flooded, and totally immersed in water during a launch or ascent accident.

Efforts to date under the SP-100 program have already established not only the feasibility of such design and operational safety features, but their efficacy and practicality as well. In fact, those efforts have shown, in general, that design and operational safety features to ensure public safety and protection of our environment are fully consistent with space reactors designed for optimum mission performance. Thus, safety can be assured for space reactors, and without penalties to the missions they support.

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE COMMITTEE ON APPROPRIATIONS

STATEMENT OF

ADMIRAL KINNAIRD R. McKEE, U. S. NAVY

DIRECTOR, NAVAL NUCLEAR PROPULSION PROGRAM

BEFORE THE

SUBCOMMITTEE ON

ENERGY AND WATER DEVELOPMENT

OF THE

HOUSE COMMITTEE ON APPROPRIATIONS

18 MARCH 1986

NOT FOR PUBLICATION UNTIL RELEASED
BY THE HOUSE COMMITTEE ON APPROPRIATIONS

STATEMENT OF ADMIRAL KINNAIRD R. MCKEE

Fiscal Year 1987 is a critical year for the Navy and the Naval Nuclear Propulsion Program. A confluence of several current events could profoundly affect the Navy's nuclear powered fleet, including those ships now in the inventory, those we expect to build, and the men who will sail them. One of these is our request for initial funds to procure long lead material for our first new design attack submarine in twenty years, the SSN-21 -- SEAWOLF. However, before discussing SEAWOLF, I would like to bring you up to date on the overall program.

We now have 177 naval reactor plants in 149 ships and eight land-based prototype plants. Nuclear-powered ships now comprise more than 40% of the Navy's combatant fleet. Last year we added four more ships to the fleet, and we have 27 additional ships authorized or under construction. Our responsibility for safe and reliable nuclear propulsion plant operation continues to expand as the fleet grows and ages. Half our operating ships are approaching their initial design lifetimes.

Our nuclear-powered ships represent a highly leveraged investment in national defense. When their contribution is weighed against their relatively small and stable resource requirements, it becomes apparent just how good a bargain these ships really are.

But we must remember that this leverage works both ways. The potential impact of an apparently small pro-rata reduction on safety and operational effectiveness is way out of proportion to its real dollar value.

Nuclear-powered ships have now steamed over 65 million miles, without a reactor accident and without release of radioactivity having a significant effect on the environment. This record reflects the continuous adherence to high standards and technical integrity which have been the hallmark of the Naval Nuclear Propulsion Program since its inception.

We have had a wide margin of superiority over the Soviets in all aspects of submarine warfare. Though the Soviets outnumber us, we have been able to count on technical superiority to help even the odds. The Soviets have now substantially closed that gap, and are near technical parity in undersea warfare. Last year I told you they had introduced four new attack submarines in the last three years. We now know that the latest has substantially reduced our performance margin. For years we have had the best people and the best submarines, but if this trend continues, the principal difference may only remain in the skill of the operators.

Many will probably view these reports of Soviet improvement with suspicion -- are they really that good? Others have asked how the Soviets could achieve their present levels of performance when many intelligence indicators predicted this would not happen until the next decade. Why were we "surprised"?

Well, the Soviets are that good, and we are not surprised. My principal feeling after the first intelligence briefing on the new Soviet boats was one of great disappointment, because it was clear that we were party to the event. In the mid-1970s, the Soviets saw what the 688 Class could do and immediately redoubled their efforts to catch up. The product of that effort is now at sea and operating well.

Even so, we are not yet too late. 688s will have a tough time with the best of the new Soviet submarines, but they will still be able to handle them -- for a while. It is with the next Soviet generation in mind that we have laid the groundwork for SEAWOLF.

More has been done to tailor SEAWOLF to specific military requirements than any submarine since NAUTILUS. She will be quieter, faster, and more powerful than any of her predecessors. The Naval Reactors Program is developing a propulsion plant which will deliver significantly more power at about the same size and weight as our existing plants. The SEAWOLF reactor will be more efficient and quieter at all speeds than any preceding plant. She will also have significantly improved secondary machinery.

We need SEAWOLF as soon as possible. Our initial intention was to seek a Fiscal Year 1987 authorization for the first of the class, but fiscal pressures and the technical challenge inherent in the design made it clear that a Fiscal Year 1989 authorization was better. The present schedule will get her to sea in Fiscal Year 1995, and we are on schedule. Contract design will be completed this fall, and competition for detailed design will follow. The design of all major propulsion plant equipment is well along, as is the test program that supports design decisions for long lead components. Fiscal Year 1987 advance procurement funds are needed for equipment, including the reactor plant, which is critical to meeting the ship construction schedule.

We are proceeding at a very deliberate pace for the sake of economy and technical conservatism. We are spending more time in the design and development phase of SEAWOLF than for any prior submarine. To put that in perspective, consider the crew who will man the ship. SEAWOLF's first Commanding Officer is currently a junior Lieutenant. He has probably just qualified in submarines. His Executive Officer is probably an Ensign. The CPOs are Second or Third Class petty officers. The rest of the officers and crew are still in high school and college.

At the same time, we are mindful of the difficult budget situation this year. Major uncertainties have been inserted into the process. The choices will be hard, but arbitrary pro-rata cuts are not the answer. Some things are inherently more important than others. Safety and operational effectiveness deserve special attention. Like any good banker, we should invest our available funds in those things that provide the greatest return.

And no matter how tight things get, we can't afford to neglect the future. SEAWOLF is a critical investment -- one which must be made now. We are late, but not yet too late to preserve our advantage. We must support what we have set in motion. Otherwise, we will concede superiority in one of the few areas where we now hold an unequivocal advantage. Even more, we may also put our entire strategic and tactical investment in nuclear-powered ships at risk.

A man who owns a fine home cannot afford to skip his insurance payments -- he puts at risk not only his most important investment, but also perhaps his way of life, all for relatively small short-term savings. The same thing can happen to the nuclear Navy. Congress has always recognized this, and has supported the Program well.

Naval Reactors Development Budget Request

The Fiscal Year 1987 budget contains the funds I need to do my part toward getting SSN-21 to sea. In Fiscal Year 1987, our Advanced Fleet Reactor work begins to coalesce, with continued development of new fuel concepts and the procurement of prototype reactor components. Many of these components will be tested for acceptable noise performance in dedicated laboratory facilities prior to their installation for testing in an operating reactor plant.

The eight prototype naval reactor plants are essential to the design, development, and proving out of new concepts instrumental to improving naval reactor plant performance. Only by operating resulting developmental items in a controlled, land-based environment can we prove them sufficiently to warrant a committment to shipboard use. Servicing the prototype plants is necessary to continue their safe and effective operation -- these plants are also one of the essential elements in training the Navy's nuclear plant operators.

Our Fiscal Year 1987 budget request includes $529.8 million for Operating Expenses, a fourteen percent increase over my Fiscal Year 1986 appropriation, as adjusted by the Gramm-Rudman-Hollings Act. Roughly a third of the increase is due to escalation. The remainder comes from the need to do greater amounts of servicing on more prototype plants, replacing significant equipment for the

Advanced Test Reactor in Idaho, and continuing to build the Advanced Fleet Reactor prototype core and components.

Capital Equipment requirements in Fiscal Year 1987 are $51.7 million, a growth of $26.4 million. The majority of this increase is to replace a scientific computer system at the Knolls Atomic Power Laboratory. Fiscal Year 1987 Construction funding has decreased $34.2 million from Fiscal year 1986, due to completion of the Materials Facility and Modification sand Additions to Prototype Facilities construction projects. The details of the request by major area are:

		Budget Authority (in millions)
Reactor Development		
Operating Expenses	$274.0	
Capital Equipment	51.7	
Construction	12.1	
Subtotal		$ 337.8
Plant Development		
Operating Expenses		71.0
Reactor Operation and Evaluation		
Operating Expenses		173.0
Program Direction		
Operating Expenses		11.8
TOTAL NAVAL REACTORS DEVELOPMENT		$ 593.6

Reactor Development

The Advanced Fleet Reactor, which will power the next generation of attack submarines, will be a higher power reactor incorporating the latest quieting techniques. The majority of the Advanced Fleet Reactor effort involves reactor development work, which will include: completion and qualification of component and system designs and fabrication of the prototype core and components; completion of the final design for the core instrumentation, reactor vessel and closure assembly and associated reactor equipment; shock test of a full size dummy core module; and preparation for component and system testing.

An extensive technology effort is carried out to develop and test materials, nuclear fuels and poisons, computer programs, design concepts, and manufacturing techniques; obtain and evaluate data from operating plants and ensure reactor plant safety. Development of improved materials and higher density fuel and poisons is of central importance to achieving high power, longer life cores and better reactor components. Improved materials, fuels and poisons allow designers new approaches to optimize core depletion rates while minimizing adverse material conditions. An acceptable design requires an optimum balance between the competing requirements of performance, servicability, and reliability. To aid in this work, the laboratories develop highly sophisticated computing codes and capabilities to determine and evaluate the interrelationships within the reactor and between reactor systems and components. The laboratories also develop better production processes to realize these performance gains reliably and efficiently at minimum cost.

Testing of candidate materials, fuels and poisons, and new cores and components goes on for years, and continues after an item is introduced into the fleet to ensure data is available ahead of fleet experience. Data obtained from operating fleet plants and through examining spent cores is also a valuable source of information for new reactor designs and safety evaluations.

Work underway will include fabricating the Developmental Materials Core which will be used to prove out new materials and material concepts, completing the qualification of a second source of supply for naval nuclear fuel material, examining expended cores and irradiated test specimens, developing advanced core and reactor concepts, continuing refinement of the Modified Fuel Process, selecting an advanced fuel element manufacturing process for irradiation qualification and vendor development, replacing the beryllium shield components for the Advanced Test Reactor, continuing research into thermal hydraulic processes, and determining mechanical properties of reactor components.

Capital Equipment

We need to replace the 17-year old computers at the Knolls laboratory. This is the main cause for the increase in capital equipment funds. The remaining funds will be used to replace aging equipment in the laboratories and prototype plants and upgrade efficiency in test and analytical areas.

Construction

Construction fund needs drop substantially. The principal requirements in Fiscal Year 1987 are to start upgrading the Kesselring Site Facilities to handle the prototype plant servicing work and to put an addition on the Bettis computation facility to accommodate needed computer and support equipment and security improvements. General Plant Project funds are needed to maintain the laboratories and provide test facilities.

Plant Development

The overall performance of a nuclear propulsion plant depends on the capabiities of all systems and components. Maximizing the performance gains acheived through advanced reactor designs requires corresponding improvements in all other components and systems.

Toward this end, we carry out plant arrangement optimization studies, instrumentation design and development, and primary plant fluid, mechanical and electrical system development. We are working to ensure safe and reliable plant operation. For instance, water and radiation are corrosive agents which limit component performance over the long term, leading to operational restrictions and costly overhauls and equipment replacement. We are finding ways to improve water chemistry and purification methods, develop corrosion resistant structural materials and come up with better methods to decontaminate plants.

We are also evolving better means of quality control and carrying out facility decontamination work. This work will continue in FY 1987.

Reactor Operation and Evaluation

Naval Reactors operates eight prototype naval nuclear propulsion plants to test new cores, components, and systems, and to train Navy personnel as reactor plant operators. New equipment is subject to a number of tests during development, but final design confirmation is only possible through testing in these plants. This approach allows several years of operating experience prior to fleet application. We continue to operate new equipment in the prototypes after fleet introduction to uncover problems before they are encountered in the fleet.

In 1984 we commenced an extended period of servicing the prototype plants which will continue into the early 1990's. This is a growing effort. In addition to inserting new test cores and components, we will overhaul the plants. The work is more extensive than previously conducted due to the increasing age of the plants, which now average 25 years. The experience gained and methods used in this work is directly applicable to the fleet plants, whose average age is also increasing.

Program Direction

This area provides salaries and associated costs for the 213 full-time Energy Department employees in my office and in my Pittsburgh and Schenectady field offices.

These people are crucial to our ability to develop SSN-21 as well as support operating ships. Their responsibilities continue to grow as rewards and staffing remain constant. We cannot afford to take their dedication for granted.

Water Cooled Breeder

Fiscal Year 1987 also sees the completion of my civilian nuclear energy program -- the Water Cooled Breeder effort. Twenty years of work on this program culminated with successful operation of the Light Water Breeder Reactor core in the Shippingport Atomic Power Station for five years. The core is now at the Expended Core Facility in Idaho where we are confirming the performance, which is expected to prove that breeding can be achieved in a light water nuclear power plant. This will confirm a practical way to use thorium, a plentiful fuel for which there has been no major energy-related use.

The FY 1987 Water Cooled Breeder Budget request is $13.8 million. This is $5.2 million less than the FY 1986 appropriation as adjusted by the Gramm-Rudman-Hollings Act. The major areas are:

	Budget Authority ($ in millions)
Operating Expenses	
Defueling Activities	$ 3.6
Core Evaluation	$10.2
Total	$13.8

Defueling activities will consist of: spent fuel handling and shipment to the Idaho Chemical Processing Plant for long term storage; cleaning up light water breeder reactor facilities; and publishing final reports on defueling activities.

Core evaluation work will include: completing non-destructive assay of about 3% of the light water breeder core's fuel rods to confirm breeding, disposing and cleaning up examination equipment at the Expended Core Facility, completing core and structural materials examinations, and documentation of the final program results for use by industry.

The Argonne National Laboratory will complete cleanup and waste treatment activities associated with their chemical analysis work which is funded under the DOE Fuel Cycle Program.

Statement of John L. Meinhardt
Acting Deputy Assistant Secretary for Nuclear Materials
U.S. Department of Energy
FY 1987 Appropriation Hearings

Mr. Chairman and Members of the Committee; it is my pleasure to appear before you to provide testimony regarding the Department's budget request for the Nuclear Materials program in FY 1987.

I am John Meinhardt, Acting Deputy Assistant Secretary for Nuclear Materials, within the Defense Programs sector of the Department of Energy.

My responsibilities span both the production of nuclear materials for the nuclear weapons complex and the management and disposal of nuclear wastes from all of the Department's defense activities. I thank the Committee for the support you have given to these activities over recent years. You can take pride in the achievements derived from aggressive funding and stable long-term objectives. With the Committee's indulgence, I would like, very briefly, to review those achievements.

Nuclear materials production and nuclear waste management consists of a complex of nuclear production reactors, metal foundries, chemical processing plants and waste facilities that constitute a multi-billion dollar industry unto themselves. And it is an industry with both unique hazards and important product requirements, requiring careful consideration for quality assurance and internal regulation. The original technology and facilities for producing nuclear materials were quickly placed in operation to meet paramount pressing military requirements. Most of the current facilities were built in the 1950's and early 1960's. By the mid-1960's, early design conservatism had been exploited to improve production performance, and cutbacks in nuclear materials production were being considered. By early 1971, eight production reactors at Richland and two production reactors at Savannah River had been shut down. Support facilities were scaled back. For those facilities that continued to operate with an uncertain future, capital investments in maintenance and equipment were curtailed. As a result, this period saw many facilities and components gradually wear out, deteriorate, or become obsolete.

Since 1980, however, initiatives have been taken to improve nuclear materials production capability and reliability. L-Reactor at Savannah River has been restarted and the N-Reactor at Richland has been converted to weapons-grade plutonium production. The Plutonium Uranium Extraction (PUREX) facility for processing N-Reactor fuel and the Plutonium Finishing Plant at

Richland have been reactivated after approximately 13 years shutdown in each case. The capability to process unalloyed plutonium scrap at Savannah River has been doubled. Savannah River reactors have been producing lower assay Pu-240 material which allows for blending with a large stockpile of N-Reactor fuel grade plutonium to obtain 6 percent Pu-240 weapon-grade plutonium. These changes have required adjustments throughout the system to almost double the quantities of uranium fuel and target elements processed through the production reactors.

The efficiency of DOE production reactors and the plant capacity factors for other facilities have improved as a result of partial completion of over 400 separate construction and repair activities to nuclear materials production facilities at Aiken, South Carolina; Richland, Washington; Oak Ridge, Tennessee and Fernald, Ohio. In the area of nuclear waste management, construction of the Waste Isolation Pilot Plant (WIPP) to demonstrate disposal of defense radioactive wastes is 75 percent complete. The Defense Waste Processing Facility (DWPF) for vitrification of the Savannah River high-level radioactive wastes is now under construction. We have completed two pilot facilities which we feel will address most of the stored waste at the Idaho National Engineering Laboratory at only a fraction of the cost of a larger facility once thought necessary.

I believe that these accomplishments place the Nuclear Materials activities back on the road toward reliable operation and sufficient capacities to meet defense requirements.

Chart 1 shows the Nuclear Materials FY 1987 request for $2.77 billion, including $2.07 billion for Nuclear Materials Production, and $0.70 billion for Defense Waste and Byproducts Management.

Turning to the plans and funding requirements for FY 1987, I will discuss nuclear materials production and waste management separately.

NUCLEAR MATERIALS PRODUCTION PROGRAM

INTRODUCTION

OBJECTIVES

Chart 2 shows the objectives of the Nuclear Materials Production program. The major objective is to provide nuclear materials for national defense requirements. The program is also responsible for producing nuclear materials for use in government research and development, and civilian programs which use radioisotopes for research, commercial, and medical applications.

The Nuclear Materials Production program provides materials essential to the development, production, and maintenance of nuclear weapons. We produce these materials in reactors and convert them into useful form in processing plants. These dedicated facilities are the sole source of tritium and plutonium in the United States to meet national defense nuclear materials requirements.

NUCLEAR MATERIALS REQUIREMENTS

The Nuclear Materials Production budget is primarily based on the requirements for tritium, plutonium, and enriched uranium set forth in the Nuclear Weapons Stockpile Memorandum approved annually by the President. The Nuclear Weapons Stockpile Memorandum consists of the Nuclear Weapons Stockpile Plan for the current and next 5 fiscal years (FY 1986-FY 1991), a planning projection for the subsequent 5-year period (FY 1992-FY 1996), and a long-range summary for nuclear materials planning for 5 additional years (FY 1997-FY 2001). The President annually issues a National Security Decision Directive approving the Nuclear Weapons Stockpile Plan and noting the planning projection and long-range summary as points of departure for future stockpile plans. These forecasts are based on projected military needs as well as our ability to respond to these needs.

Chart 3 shows the total amount of plutonium and tritium expressed as the weighted sum in plutonium equivalents, excluding decay and losses, needed to satisfy the projected weapons requirements.

[deleted]

Much of the plutonium and tritium required for building new warheads and replacing decay losses is obtained by reclaiming and recycling materials from the retired weapons returned by the Department of Defense (DOD) to the Department of Energy (DOE). Material requirements which cannot be met from DOD returns or existing DOE inventories must be satisfied by new production.

[deleted]

We expect to marginally meet these projected requirements [deleted] provided [deleted] and enjoy your continuing support of our resource requirements and the special isotope separation technology is deployed on a production scale by FY 1994. The SIS deployment decision is awaiting the results of the process readiness review and the site selection.

NUCLEAR MATERIALS PRODUCTION RATES

Chart 4 shows the projected annual production rates by source of plutonium equivalent through the planning period. The production rates you see here are due largely to the production initiatives started in FY 1981--efforts this committee has strongly supported. [deleted]

Among the initiatives which contributed to the rise in production are blending to utilize inventories of low-grade plutonium, conversion of N Reactor to production of weapon-grade plutonium, reactivation of the PUREX fuel processing plant, restart of L Reactor, and facilities restoration. A technology initiative which can begin contributing in FY 1994 is the special isotope separation (SIS) program, and Chart 4 is based on production deployment of that technology by 1994. DOE is currently performing a process readiness review of the competing SIS processes. Based upon the results of this review, a deployment decision will be made. These recent increases in production capability permit us to meet the projected requirements of the nuclear weapons program. I will discuss the materials production initiatives in more detail later.

Chart 5 shows the relative product costs from supply options currently available and proposed. In general, the incremental plutonium production which the recently implemented initiatives provide is considerably less costly than the historical average cost of plutonium production when operating only three production reactors at Savannah River.

COMPARISON OF U.S. AND U.S.S.R. PRODUCTION

Our historical annual rate of production (plutonium equivalents) is shown in Chart 6. When production scale activities were initiated in the 1940's, the production complex [deleted] plutonium equivalent per year. In the late fifties and early sixties, when we were operating up to 13 reactors, U.S. plutonium equivalent production reached a peak [deleted] During the 1960's, many production reactors were shut down. Through the seventies, we produced less [deleted]

As a matter of comparison, nuclear materials production in the U.S.S.R. is also indicated in Chart 6.

[deleted]

HIGHLY ENRICHED URANIUM

I also want to mention the supply of highly enriched uranium for U.S. weapons. The U.S. weapons program has operated within its existing inventory of enriched uranium for the last 20 years without having to obtain additional material from the uranium enrichment complex This has been accomplished by recycling enriched uranium from retired warheads. Although recycling continues, the supply of highly enriched uranium is decreasing due to utilization in weapons tests, production reactors and research reactors and changes in [deleted] requirements. A need for additional quantities of highly enriched uranium is projected for the weapons program starting as early as FY 1988 as shown on Chart 7. Uranium feed required to produce the highly enriched uranium needed for Defense Programs activities can be provided from DOE's existing inventory, at least through Year 2001, through a combination of utilizing natural uranium feed and recycling partly depleted uranium "tails." However, if the Oak Ridge Gaseous Diffusion Plant, which is currently in standby mode, is shut down or if recycling of partly depleted uranium "tails" is not a viable option then uranium feed could be required as early as FY 1992. Regardless of the feed requirements, it will be necessary to significantly increase the highly enriched uranium production capability and reestablish the supporting uranium hexafluoride to uranium tetrafluoride conversion capability. These activities are being accomplished at a cost of approximately $30 million. This additional capacity would allow DOE to meet existing Naval Reactors program requirements as well as the projected weapons program requirements.

REPORT ON NUCLEAR MATERIALS REQUIREMENTS

The Defense Authorization Act for 1986 (P.L. 99-145) requested the Secretary of Energy and the Secretary of Defense to submit a report to the Congress detailing the military requirements for and sources of special nuclear material through FY 1991 and the impact of new materials separation, purification, and production technologies on nuclear proliferation.

There are two principal military requirements for nuclear materials: the nuclear weapons program and the naval reactors program. The weapons program requirements identified in this report are based on the current nuclear weapon stockpile projections jointly developed by the DOE and the DOD. The requirements reflect the preliminary impact of the Gramm-Rudman-Hollings legislation.

Chart 8 summarizes the conclusions reached in the report. During FY 1986-FY 1991 [deleted] are projected to be produced by DOE and delivered to DOD. These units are estimated to contain [deleted] plutonium, [deleted] tritium, and [deleted] highly enriched uranium. During this period [deleted] are projected to be retired from the DOD stockpile, representing [deleted] [deleted] the plutonium, [deleted] the tritium, and [deleted] the highly enriched uranium requirements of the weapons program. The balance of the weapons program requirements will be provided from existing inventories and new production.

[deleted]

During FY 1986-FY 1991, the production reactors will be operated at capacity in order to meet projected requirements. The reactors are scheduled first to produce the tritium required, then plutonium. Weapon-grade plutonium production is augmented by producing high purity plutonium in the Savannah River reactors and blending it with nonweapon-grade plutonium from DOE's Defense Programs inventories.

The uranium enrichment complex is scheduled to produce material for both the weapons program and naval reactors program. The weapons program is estimated to need [deleted] of highly enriched uranium and the naval reactor program is estimated to need [deleted] very highly enriched uranium during FY 1986-FY 1991.

Finally, the report concluded that development of new separation, purification, and production technologies is not judged to significantly add to the risk of nuclear proliferation.

PRODUCTION PROCESS AND MATERIALS FLOW

Before I get into the details of our request, I would like to describe, using Chart 9, the DOE defense nuclear fuel cycle and its associated facilities. The gaseous diffusion plants provide uranium of the proper enrichment levels to the feed material facility at Fernald, Ohio. A facility at Ashtabula, Ohio, extrudes low enriched uranium metal billets provided by the facility at Fernald. The material is returned to the Fernald facility for additional processing for the material destined for Savannah River or transported to Richland where it is fabricated into fuel or targets for use in the reactors.

Uranium fuel is obtained from four sources: (1) slightly enriched and highly enriched uranium recycled from irradiated defense production reactor fuel; (2) highly enriched uranium recovered from spent Navy and research reactor fuel at Idaho and processed into usable form at Oak Ridge; (3) highly enriched uranium stockpiled at the Oak Ridge Y-12 plant; and (4) new slightly enriched uranium obtained from the DOE enrichment plants.

Our Savannah River reactors can produce both plutonium and tritium. For plutonium, the reactors use about 60 percent enriched uranium in the fuel rods to drive the reactors and irradiate depleted uranium target rods to produce plutonium.

The N Reactor at Richland uses slightly enriched uranium to fuel the reactor and produce plutonium. The spent fuel from N Reactor is processed at the PUREX fuel processing plant to recover both the produced plutonium and the remaining uranium.

Idaho receives, stores, and processes fuels principally from Navy propulsion reactors for the recovery of residual enriched uranium. The recovered uranium is used as fuel for the Savannah River reactors. In the processing of these fuels, krypton 85 can be recovered for commercial and other purposes.

The material flow I have just described involves large facilities at six field sites in five different States. These sites comprise about 1,850 square miles of land and employ about 14,600 people. These six production sites, shown in Chart 10, are located at Aiken, South Carolina; Richland, Washington; Idaho Falls, Idaho; Oak Ridge, Tennessee; and the metal production and processing facilities at Fernald and Ashtabula, Ohio. Lawrence Livermore National Laboratory and Los Alamos National Laboratory carry out production related research and development, safety analysis, and material processing activities.

COMMITMENTS

As the Assistant Secretary for Defense Programs has testified, we are committed to assuring the continued availability of nuclear materials in the near and long-term and to restoring, revitalizing, and maintaining Department facilities to meet these material requirements.

Before discussing production and operational viability activities, I would like to talk about what the Nuclear Materials Production program is doing to support the Department's commitment in two important activities, as shown in Chart 11.

COMMITMENT TO PRIORITY ENVIRONMENTAL IMPROVEMENTS

In a recently issued Environmental Policy Statement, the Secretary of Energy restated the Department's long standing policy to conduct its operations in an environmentally safe and sound manner. DOE is committed to taking actions necessary to comply with applicable environmental statutes, regulations and standards while providing nuclear materials required for national defense.

The FY 1987 budget request for environmental activities continues this emphasis and commitment, and provides new long-term solutions for priority and problem areas. In particular, compliance actions are underway to meet the requirements of the Resource Conservation and Recovery Act, the Clean Air Act, the Clean Water Act, and the Comprehensive Environmental Response, Compensation and Liability Act.

To assure efficient usage of limited resources to comply with the evolving multitude of Federal, State, and local environmental requirements, the Office of Nuclear Materials is in the process of preparing long-range plans to address Environmental, Safety, and Health (ES&H) concerns. Plans will be prepared by our production facilities to address any site specific concerns. An overall plan will be prepared for the Nuclear Materials Production program to evaluate and prioritize planned activities so that funding can be allocated on a logical basis. We expect to complete the first round of the ES&H long-range plans this year which then will be updated on an annual basis to reflect changing requirements/operations and funding availability.

COMMITMENT TO SAFEGUARDS AND SECURITY IMPROVEMENTS

A continued commitment is given to: (1) evaluations of the remaining security vulnerabilities at key DOE weapons and research facilities; (2) more comprehensive, integrated planning for safeguards and security activities and improvements; and (3) more effective operations of safeguards and security systems, including performance testing of such systems. This increased priority is due principally to the need for improvements identified as the result of inspections and investigations by: (1) the DOE Headquarters and field offices: (2) the DOE Inspector General; (3) the General Accounting Office; and (4) various Congressional committees. The continued sense of priority also results from the ongoing international terrorist threats to U.S. interests. Not only might such groups be interested in nuclear materials or fabricated nuclear weapons, they or their supporters might be interested in acts of sabotage against key nuclear weapons facilities to disrupt or damage the weapons production capability of the U.S.

These potential threats, as well as inspections and investigations, have focused management attention on the priority need for increased funding to improve the security of key DOE facilities and to provide adequate safeguards for special nuclear materials. Cost increases this fiscal year are primarily due to line item projects begun in previous years to replace obsolete intrusion detection and assessment systems and nuclear material measurement systems. In addition, a small increase is required for increased security inspector staffing of new facilities such as the Fuel Manufacturing Facility at Savannah River.

It is essential to national security and the protection of public health and safety to improve the state of safeguards and security at our vital facilities. The safeguards and security budget for FY 1987 has been formulated as part of an agency-wide effort to maintain the momentum of previous years and to correct remaining deficiencies. Requested funding is essential to maintain and strengthen effective safeguards and security functions.

FY 1987 BUDGET REQUEST

Turning now to the FY 1987 budget as shown in Chart 12, we are requesting $2.07 billion in support of Nuclear Materials Production activities.

Chart 13 shows the major reasons for changes from the FY 1986 appropriation request. The majority of the increase can be attributed to escalation on our on-going activities and the need to meet base program and maintenance requirements, which I will discuss in more detail later.

The highlights of our FY 1987 requests are shown in Chart 14.

Chart 15 shows a crosscut of our budget request broken down into important program activities. I will address each in detail.

BASE ACTIVITIES

The major component of our request is for base activities as shown in Chart 16, which include currently operating facilities that will continue to operate for the production of nuclear materials as contrasted to initiatives which will increase materials production capacity and assure long-term operations. Of the requested amount, $1.3 billion is needed to support base activities.

CURRENT OPERATIONS

Meeting the objectives of the program requires operation of the four Savannah River reactors to produce tritium and high-purity plutonium for blending; operation of the Richland N Reactor to produce weapon-grade plutonium; operation of two chemical processing facilities at Savannah River, one at Richland, and one at Idaho; operation of reactor feed materials and fuel fabrication facilities at Fernald, Ashtabula, Oak Ridge, Richland, and

Savannah River; ongoing security and environmental protection improvements; ongoing process development activities; and operation of utilities and other site support facilities. The base program also supports processing of the Naval and research and development reactor spent fuel returned to Idaho, recovery and processing of scrap nuclear materials to supplement new production, and supporting other Department, government, and industry requirements. Considerable funding is required for maintenance and equipment replacement needed to operate these aging facilities in a safe, secure, efficient, and environmentally-acceptable manner.

In addition to the production of weapon-grade plutonium directly in reactors, weapon-grade plutonium can be made available by blending high purity plutonium with lower fuel-grade plutonium. Although the Richland N Reactor is now operating to produce weapon-grade plutonium, during much of the time when the PUREX fuel processing plant was on standby, N Reactor was operated to produce fuel-grade plutonium. This stored material is now being processed and the plutonium obtained is being blended with high purity plutonium currently being produced at Savannah River to increase the supply of weapon-grade plutonium. Not all of the PUREX capacity is required to provide fuel grade plutonium for blending at Savannah River. PUREX is also processing fuel containing weapon-grade plutonium which is currently being produced in N Reactor. The combined fuel-grade processing for blending at Savannah River and weapon-grade processing for direct use at Rocky Flats maximizes the total production for Defense Programs.

Blending is estimated to contribute [deleted] additional plutonium through the 16 year NWSM planning period.

In FY 1987, processing operations at Richland will be increased compared with FY 1986. Operations in the plutonium scrap processing and plutonium metal production areas will be run essentially around the clock (21 shifts per week) to maximize output of plutonium metal for Rocky Flats. Total plutonium output at Richland is expected to be [deleted] in FY 1987 compared to [deleted] in FY 1986. At Savannah River, we will continue to blend plutonium to produce weapons grade material. The quantity delivered to Rocky Flats in FY 1987 will be [deleted], compared with [deleted] in FY 1986. Also in FY 1987, the Special Recovery Facility for processing of plutonium will begin operation, replacing the limited capacity FB Line. Efforts on the reactivation of the Multi-Purpose Processing Facility (MPPF) will be nearing completion in FY 1987. This facility will be used to separate the special material

Americium-243, for use as a tracer in underground nuclear testing at the Nevada Test Site. We expect to have the MPPF operational and to start delivering the Americium-243 to the weapons laboratories by late FY 1988.

ENVIRONMENT

It is the policy of the Department of Energy to operate the production complex in an environmentally acceptable manner while providing nuclear materials required for national defense. The FY 1987 budget request for environmental activities continues this emphasis and commitment and provides for the beginning of new long-term solutions for priority problem areas.

The FY 1987 operating request provides funds for continuing previously initiated environmental activities at Savannah River, including: (1) elimination of the potential for future contamination of ground and surface waters from radioactive and hazardous industrial waste discharges; (2) expanded monitoring, evaluation and cleanup of ground water contamination; and (3) engineering studies on deactivating and decontaminating seepage basins. These activities are either consistent with the Groundwater Protection Plan for Savannah River, which was submitted to the Congress in FY 1984 pursuant to Public Law 98-181, or required by other statutes.

Our FY 1987 request also includes first year funds for five new construction projects (the only new starts requested in FY 1987) aimed at enhancing the protection of the environment at our materials production sites. These projects will help assure that our materials production facilities are capable of complying with new and existing environmental protection laws and regulations both at the State and Federal level.

At Savannah River, two new projects will be initiated to improve hazardous chemical handling and storage operations and to mitigate the thermal effects of reactor operations on nearby streams. Additionally, the FY 1987 budget request provides second year funding for a project begun in FY 1986 for the construction of a new wastewater storage and treatment facility to process liquid wastes from the separations areas.

At Richland, two new projects are requested that will improve existing discharge systems for both chemical and low-level radioactive wastes. For chemical wastes, a waste stream diversion and holdup system will be installed to assure disposal of these wastes in compliance with applicable State and Federal regulations. It is also planned to initiate design for a waste treatment system at the N Reactor which will allow recycle of many of the low-level radioactive wastes that have previously been discharged to the ground.

At the Feed Materials Production Center (FMPC), Fernald, Ohio, FY 1987 construction project efforts will provide significant improvements in controlling water contamination, modify and upgrade facility ventilation systems to reduce the risk of airborne contamination, and provide for improved control of activities on-site that have potential for inadvertent contamination of personnel and the environment.

Environmental and worker health concerns at the FMPC developed following the discharge of 125 kilograms of uranium due to a faulty air filtration system in November/December 1984 and the subsequent issuance by DOE of information on historical uranium release from FMPC. Investigations of various aspects of FMPC operations were conducted by DOE, DOE contractors, the General Accounting Office, and the Senate Governmental Affairs subcommittee on Energy Nuclear Proliferation and Government Process in 1985. The Senate committees conducted a field hearing on ES&H requests of FMPC operations at Cincinnati, Ohio on April 22, 1985. The extensive interest by Congress, Federal, and State agencies, special interest groups, and the general public have resulted in various compliance actions (Federal Facility Compliance Agreement by U.S. Environmental Protection Agency and consent order by Ohio Environmental Protection Agency) and legal actions. DOE is aggressively pursuing assessment and planning efforts to determine needed corrective actions scheduled for implementation and associated funding requirements. Renovation activities for FMPC were initiated in FY 1982. The bulk of activities began in FY 1985 and continue through the 1980's. DOE plans to prepare an Environmental Impact Statement to obtain public inputs to assist DOE in its decision making process. It is DOE's goal to comply with applicable ES&H requirements for FMPC operations and to reduce operational risk and environmental releases to as low as reasonably achievable levels. Last year the contractor for FMPC, National Lead of Ohio, chose not to renew its contract with DOE. Westinghouse Corporation has recently been named the new site contractor for FMPC. Westinghouse has expressed its desire to work with DOE to resolve any environmental problems at the FMPC.

SECURITY

In FY 1987 we plan to continue priority security improvements to address needs identified by recent Departmental assessments.

Emphasis will include improvements to: (1) the detection and deterrence capabilities against both insider and outsider threats; (2) our ability to respond to acts of sabotage, terrorism, theft, or other disruptive acts; (3) equipment and instrumentation; and (4) personnel training.

Continuing line-item security projects funded in FY 1987 include two projects at Savannah River aimed at eliminating site-wide security deficiencies by installing intrustion detection and assessment zones, access controls, and new central alarm, control and communication systems.

PRODUCTION INITIATIVES

We are seeking funding in FY 1987 to continue several projects, shown in Chart 17, that are required to assure achievement of future materials production goals. These projects deal with the heart of our program in that their objective is a reliable, fully-functioning production complex.

PRODUCTIVITY RETENTION

The Productivity Retention Project is a $550 million multi-phase, multi-site effort aimed at increasing the operating availability and efficiency of critical production components at Savannah River, Richland, and Fernald. The project is divided into separately introduced phases with the content of each phase determined by relative schedule urgency.

Initial funding was provided for Phase I in FY 1986, and design is now underway on five subprojects. These include: replacement of the thermal diffusion column process for separation of tritium at Savannah River; modernization of equipment and systems at Fernald; replacement of two overhead bridge cranes in the hot separations canyon at Savannah River; replacement of plutonium finishing components of the JB Line at Savannah River; and rehabilitation of N Reactor coolant system components at Richland.

Funding of approximately $76.2 million is needed in FY 1987 to proceed into Phase II which is procurement and construction on these subprojects and to initiate the next eight subprojects. The total estimated cost through Phase II is $282.1 million. While it is not feasible to address each of the eight new subprojects in the time allotted, a reasonable understanding of the total group can be obtained by covering one of the more easily capsulated efforts--improved Slug Processing--at Savannah River.

This subproject replaces a portion of the reactor slug manufacturing line which has been in service for 16 years and has produced two million uranium slugs. It has served well but is nearing the end of its operational life. Maintenance cost and downtime have increased with age and do not allow the sustained operation at a production level required for blending activities and operations of a fourth reactor. Components such as: the lubrication dip and drying station; the argon atmosphere furnace for heating the slug assemblies; the hot die size bonding press; the end bonder; and the shell blast cleaner have been down an average of 35 percent of the time over the past 3 years for repairs. [deleted] Under current production forecasts, an additional two million slugs must be produced in the next 6 years. [deleted]

Most Productivity Retention subprojects offer significant side benefits. In the case of the Improved Slug Processing subproject, operator exposures to radiation will be reduced through increased automation and NO_x emissions to the atmosphere will be cut through new technology. Further, higher throughput rates combined with improved yields and reduced maintenance will allow a one-third reduction in operating personnel. This will result in an annual cost savings of $4 million and equates to a 13 percent rate of return. Such savings are typical of the subprojects in the line-item.

RESTORATION OF PRODUCTION CAPABILITIES

The Restoration of Production Capabilities project was begun in FY 1981 and is the oldest of our production initiatives. It is now in the latter stages of construction and many of the earlier subprojects have already been completed. Funding of approximately $7.8 million is required in FY 1987.

IDAHO RESTORATION

Facilities at the Idaho site are not included in our Restoration Program. However, spent fuel returns from the Navy are scheduled to double by 1992 and continue increasing through the year 2000. Our requested funding for FY 1987 will allow the continuation of the design work and long lead equipment procurement activities and the initiation of construction activities for the Fuel Processing Facility which was initially authorized in FY 1985. This project is required to increase capacity and ensure reliability sufficient to process the scheduled fuel returns. The enriched uranium recovered at Idaho is beneficial to the operation of Savannah

River production reactors since it greatly reduces the amount of new highly enriched uranium required.

SPECIAL ISOTOPE SEPARATION

The FY 1987 budget requests $75.9 million to continue research and development on the Special Isotope Separation (SIS) technology and maintain the option for future deployment. The request will enable testing of prototypic plant laser and separator systems directed toward the demonstration of simultaneous multi-isotope plutonium separations in FY 1988.

As directed by the Congress, DOE is completing an independent process readiness review of the candidate laser isotope separation processes. The conduct of this review has been the responsibility of the Director of Energy Research, and a report to DOE is expected during March. Should that report identify an acceptable process for proceeding with a production facility, DOE will then be in a position to support a continuation of project 86-D-148 which was funded for design and engineering during FY 1986.

Pending the results of these evaluations, DOE is continuing to pursue its baseline technical approach to SIS development. This baseline has been described in detail in the SIS Deployment Management Plan which was provided to the Armed Services Committee.

PROCESS FACILITY MODIFICATIONS

The Process Facility Modifications (PFM) Project at Richland will add to the existing PUREX fuel processing facility the capability for processing and recovering plutonium from DOE-owned fuels and will provide the capability to process Richland's N Reactor spent fuel in a more cost effective manner than in the existing headend portion of PUREX. By 1990, FFTF spent fuel containing plutonium with a replacement value to Defense Programs of over $1 billion will be available for processing. Processing of N Reactor fuel in PFM will significantly reduce the volume of high level radioactive waste currently generated by the PUREX headend process. The FY 1987 funds will permit continuation of design and long-lead procurement activities as well as the initiation of construction efforts.

REACTOR PRODUCTION ASSURANCE/NEW PRODUCTION REACTOR

Deployment of the New Production Reactor (NPR) has been deferred for several years while life extension studies on existing Savannah River production reactors and refurbishment plans for N

Reactor are completed. The current NPR effort will end with the issuance of the reports on the small reactor studies. Constrained budgets in the foreseeable future and uncertainties associated with weapons material requirements have also been a factor in this decision to defer NPR activities. At the present time, there are no known near term, life limiting mechanisms identified in the heavy water production reactors in operation at Savannah River. Studies of potential long-term, life limiting mechanisms, and their mitigating actions, are currently underway with a final report expected by June 1988. Additionally, the ongoing restoration and productivity retention programs will assure the continued reliability of the Savannah River reactors.

A recently completed study of the N Reactor production assurance program at Richland concludes that this facility can be reliably operated through the mid-1990's and that several cost-effective alternatives are available to refurbish N Reactor and extend its useful life well into the next century. Decisions on whether to pursue these alternatives will be required in the late 1980's and can be phased so that if a refurbishment program is pursued, it is tailored to material needs and budgetary constraints.

Program activities in FY 1986 through FY 1988 include continued maintenance, surveillance and operational activities to assure safe and reliable operations of the Savannah River reactors and the N Reactor at Richland, Washington; completion of studies by 1988 of potential long term, life limiting mechanisms and mitigating actions on those reactors, and development of plans for a decision making process including initiation of appropriate National Environmental Policy Act and safety documentation.

NAVAL REACTORS SUPPORT

The Nuclear Materials Production program budgets for the separative work to produce highly enriched uranium from the Department's gaseous diffusion complex for the Naval Reactors program is shown in Chart 18. In FY 1987, we will require [deleted] Uranium-235 for the Naval Reactors program. This highly enriched uranium will be used for fabrication of naval propulsion reactor cores. It will also be used to continue naval fuel production in the new facility at Savannah River, which began operation in FY 1986. The total Naval Reactor support request is $190 million.

SUMMARY OF FY 1987 PLANNED ACTIVITIES

In summary, the major elements of our proposed FY 1987 Nuclear Materials Production budget are directed toward meeting the

Nuclear Weapons Stockpile Memorandum requirements and achieving safe, secure, and environmentally acceptable operations of our Nuclear Materials Production complex. A recap of our plans is shown in Chart 19.

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT PROGRAM

INTRODUCTION

OBJECTIVE

The Defense Waste and Byproducts Management (DWBM) Program's principal objective is to provide essential support for production of nuclear materials and weapons by safe and environmentally responsible management of radioactive wastes. These wastes are primarily of three types--high-level, transuranic, and low-level as described in Chart 20--and are generated by Department of Energy (DOE) defense activities, the Naval nuclear propulsion program, and other DOE research and development work. The program also emphasizes providing techniques for managing hazardous chemical waste at our defense sites to meet environmental standards.

Our responsibility is to manage defense wastes routinely, safely, and cost-effectively. This includes the disposal of the backlog of stored defense nuclear waste located at the sites shown on Chart 21. The next chart (Chart 22) shows the volume of waste that has been generated from almost 40 years of nuclear material production activities. We are generating increasing quantities of high-level waste, about 43,000 cubic meters during the past year for storage, in response to Nuclear Materials Production support of weapon needs. Therefore, our need for storage facilities is increasing, especially at Richland, and additional high-level waste tank storage capability is included in our FY 1987 request. Production activities are also adding about 5,000 cubic meters of transuranic (TRU) waste and 90,000 cubic meters of low-level waste during the past year.

In June 1983, the President submitted to you the Defense Waste Management Plan which reflected our plans for permanent disposal of high-level waste and TRU waste. Our FY 1987 program continues progress in implementing that Plan. The major portions of that Plan, including construction of: (1) the first production-scale immobilization facility for high-level waste, the Defense Waste Processing Facility (DWPF) at Savannah River; (2) facilities to process TRU waste at Idaho National Engineering Laboratory (INEL); and (3) the Waste Isolation Pilot Plant (WIPP) in New Mexico, have all been supported in prior years and, with the exception of DWPF, we are on the down-side of the construction funding curves for these key facilities. We must now begin to provide increased operating funds to support startup and operation of these facilities. We are beginning to address similar facilities at other sites, ensuring technology transfer, and are cost-effectively addressing the unique characteristics of defense waste at these sites. Although the schedules for these sites are running somewhat later than the schedules reflected in the Defense Waste Management Plan, we feel it is the proper pace given our technical understanding, the capabilities of our current storage systems, and budget realities. I will talk more about our specific plans in just a moment.

MAJOR PROGRAM ACTIVITIES

HIGH-LEVEL WASTE

High-level waste is, in general, the unavoidable, highly radioactive liquid waste resulting from plutonium production and enriched uranium recovery operations at Savannah River, INEL, and Richland. Our ultimate objective is to achieve permanent disposal by immobilizing and preparing high-level waste for shipment to, and permanent disposal in, a geologic repository.

We are reasonably on schedule with construction of the DWPF at Savannah River. Construction began in October 1983, and hot operations are planned for early FY 1990. Actions to comply with Gramm-Rudman-Hollings reductions have caused this operational date to slip about 3 months, and we are assessing the potential cost impact. At Richland, our schedule for disposal of high-level waste has been delayed several years while we improve our technical basis and adjust to budget priorities. A major milestone in our plans for Richland will be completion of the environmental impact statement (EIS). We hope to dispose of the old single-shell tanks in-place, provided the ongoing analysis, environmental documentation, and demonstration will support that option. We expect to construct a high-level waste immobilization plant at Richland, building on our experience with the DWPF. In FY 1987 our efforts on planning, process and equipment engineering, and conceptual design to optimize the economics, safety, and reliability of that facility will continue. The INEL continues to store its calcined waste in stainless steel bins. Since waste in this solid form is exceptionally stable, we will continue this approach pending selection of one of the ultimate disposal alternatives currently being evaluated for implementation in the early part of the 21st century.

In April 1985, the President supported DOE's recommendation to use the repositories to be constructed under the Nuclear Waste Policy Act of 1982, Public Law 97-425, for disposal of defense high-level waste. Therefore, the Department is proceeding with arrangements to dispose of defense waste in the same repository used for civilian waste. Information regarding the methodology for payments to the Nuclear Waste Fund for our defense waste was reviewed by the Office of Management and Budget (OMB). It is proposed to be implemented as a major rule and is based on all users paying their full share of the cost of developing, constructing, and operating the repository.

TRANSURANIC WASTE

TRU waste contains the long-lived, radioactive elements beyond uranium in the periodic table, but including U-233. The principal element in such waste is plutonium. The objective of the Plan with regard to TRU waste is to end interim storage and begin permanent disposal. Newly-generated and stored defense TRU waste is now being certified, or processed and certified, for compliance with the WIPP Waste Acceptance Criteria and will be sent to the WIPP in New Mexico when that facility is completed. After a 5-year demonstration period, a decision will be made to leave or retrieve the TRU waste. The demonstration period will focus on issues raised by the State of New Mexico and on development of a more comprehensive understanding of the phenomena involved. Since 1984, many newly-generated TRU waste forms have been made certifiable for WIPP and stored separately, pending future transfer to WIPP.

Facilities needed to examine and process, if necessary, the stored transuranic waste at INEL are proceeding. The Stored Waste Examination Pilot Plant (SWEPP) facility began operations in August 1985, examining stored waste. The Processing Experimental Pilot Plant (PREPP) facility will be completed in FY 1986 and will operate in a cold-checkout mode. PREPP is expected to begin processing waste in FY 1987. The construction of the WIPP is proceeding extremely well, and we now expect to complete major surface construction by December 1986 with operation planned in October 1988. Activities to address disposal of stored TRU waste at Savannah River and Richland are underway.

COSTS

I would now like to address FY 1987 funding needs as shown on Chart 23. A summary of the reasons for our budget changes is shown in Chart 24. While we are reducing our overall construction requests for the DWPF and the WIPP, our operating expenses are increasing because we are adding a new dimension to our program--preparing to process waste for disposal and implementing plans to demonstrate disposal of waste in WIPP. We will continue to make progress in our efforts to get the waste out of the old tanks and into new tanks at Savannah River and Pichland. Our FY 1987 request assumes the reprogramming of funds remaining from several prior year projects to meet FY 1987 operating and construction needs. Details of these actions are shown in our budget narrative.

I will now describe our FY 1987 program in more detail.

INTERIM WASTE OPERATIONS

The principal objective of this program is the safe and environmentally acceptable management of existing and newly generated waste from nuclear materials and weapons production and naval reactors operations, pending implementation of permanent disposal options. The program includes the operation and maintenance of high-level waste storage tanks, bins, and related processing and storage facilities at Richland, Savannah River (SRP), and Idaho (INEL); the operation and maintenance of LLW burial grounds at Savannah River, Oak Ridge National Laboratory (ORNL), INEL, Richland, Los Alamos National Laboratory (LANL), Sandia National Laboratory, and Nevada Test Site (NTS); the retrievable storage of TRU waste at various sites; the operation of low-level liquid waste facilities; the operation of three filter test stations; and the processing of low-level gaseous effluents. In addition, as facilities are constructed to prepare TRU waste and high-level waste for permanent disposal, those facilities will be operated under the Interim Waste Operations program.

During FY 1986 and 1987, the transfer of high-level waste from old tanks to new tanks will continue at Richland. The pace of this program has, however, been slowed mainly because of competing demands for available tank space and delays in the grout program. Limited pumping from old tanks will occur in FY 1986, and no additional tanks will be stabilized, or drained. During FY 1986, ten tanks previously stabilized will be isolated, which means all piping accesses to the tank will be sealed. Completion of this program has slipped to 1992.

A major effort at Richland in FY 1986 and 1987 will be to convert the B-Plant to a facility for processing liquid TRU waste and high-level waste from PUREX plant fuel processing operations. Studies have identified the benefit of using B-Plant for treating newly generated waste from the PUREX plant. When fully operational, processing of PUREX plant waste streams in B-Plant will save significant costs in two ways. First, by the plant segregating, decontaminating, grouting, and disposing the low-level component from the waste, high-level waste tank farm storage space will be saved. Second, the volume of waste which will ultimately have to be vitrified for disposal will be significantly reduced which, in addition, will save repository costs.

Also at Richland, construction of the eight double-shell tanks, begun in 1983 to provide storage space for PUREX plant waste, will be completed in the fourth quarter of FY 1986. We have also requested a new line item in FY 1987 to build four more high-level waste tanks to meet production needs. Additional tanks are also expected in the FY 1988 budget as we continue to respond to increasing waste storage needs. Construction of a portable grout facility to solidify low-level liquid waste for shallow land disposal, as part of the Waste Handling and Isolation Facilities Project, is continuing. Operations are scheduled to begin in FY 1988. This project is critical to avoiding shutdown of production since it will handle the low-level waste separated at B-Plant.

The Savannah River waste transfer program is scheduled for completion in 1994. Transfer of waste from the worst tanks will be completed in FY 1986. Waste will be processed in the tank farm to meet feed requirements for the DWPF. Sludge washing facilities will begin operation in 1986 to assure an adequate backlog of feed for DWPF operation. Installation of salt decontamination facilities will continue in 1986, and operation will begin in 1987. The salt will be incorporated in concrete to produce saltstone which will be disposed of on site. This activity will save a significant volume of tank space. Design and construction of a New Waste Transfer Facility to replace old inadequate facilities and to interface with the DWPF will continue in FY 1987. Our FY 1987 request also includes a project to provide permanent enclosures over certain tank farm facilities so they can be used and maintained regardless of weather conditions with reduced worker exposure to radiation.

At Oak Ridge, we are redirecting the Interim Waste Operations program at ORNL because of recent decisions to indefinitely defer disposal of liquid waste by hydrofracture and to cancel plans to develop a Central Waste Disposal Facility for shallow-land burial of solid low-level waste, as proposed in a draft EIS issued in September 1984. A new waste management policy has been established for the Oak Ridge complex which requires generators to reduce waste volumes through implementation of improved volume reduction techniques. Under the new policy, existing waste storage and disposal capacity will be extended several years. In FY 1986, Oak Ridge will begin to evaluate improved solidification and disposal techniques for liquid waste. The evaluation will lead to selection and implementation of a process to replace the hydrofracture technology in 1989. In addition, ORNL will begin demonstrating alternative technologies for disposal of low-level waste in FY 1987. Full-scale deployment of a preferred disposal technique is planned for the early 1990's.

At the Feed Materials Production Center (FMPC), Fernald, Ohio, waste generation is expanding rapidly with increased production efforts at that facility. To handle the increase, a decision has been made to process, package, and transport all low-level waste for disposal at the NTS. As opposed to processing and storage in silos on site, this promises to save the taxpayer about $20 million over the next 20 years. We started shipping to the NTS in FY 1985 some of the waste which required minimal processing. We have started construction of the low-level waste processing and shipping system (Project 86-D-179) which will process the remaining waste so it can also be shipped. The facility will be operational in 1989. Until that time, waste will be stored on site in drums. We also plan to conduct in 1987 an analysis of alternatives for potential remedial actions on 440,000 cubic yards of waste stored in pits and 12,400 cubic yards of waste stored in concrete silos at FMPC. A characterization study of the pits and silos is being conducted in FY 1986 to support the alternatives analysis. Identification of a preferred remedial action alternative is scheduled for FY 1988.

WASTE VOLUME REDUCTION

Waste volume reduction is an important element of the Interim Waste Operations program because it extends the lifetime of storage and disposal facilities and delays the need for new facilities. At Savannah River, for example, our goal for FY 1986 and 1987 is to annually gain 6 million gallons of high-level waste storage capacity through our evaporation processes. This is the volume equivalent of about six new tanks. At Richland, we have a single waste management evaporator in operation to support PUREX plant processing operations and reduce tank requirements. This evaporator will reach its 10-year design life in 1987, and we must upgrade it to avoid increased downtime and potential impact on nuclear materials production activities. Our FY 1987 request includes a project to accomplish this upgrade by 1991.

Solid waste volume reduction operations will continue in order to reduce the rate of expansion of new burial ground facilities at our sites. However, we will still require a burial ground expansion project at Savannah River to meet our low-level waste disposal needs in late 1988. Examination of newly generated suspect TRU waste will reduce the amount which must eventually be disposed of in the WIPP.

LANDLORD RESPONSIBILITIES

Under our landlord responsibilities, we will continue restoration of badly deteriorated general purpose support facilities and equipment to an acceptable standard of safety, reliability, and efficiency. We expect to eliminate the backlog of facilities requiring restoration at Richland in FY 1988. The FY 1987 Richland landlord program continues the design and construction of a new central warehouse facility to replace the old one which is beyond economical repair, and start construction of a tie-line between existing steam plants to enhance system redundancy necessary to support critical material production activities.

At INEL, maintenance, repair, replacement, and upgrade activities continue for general purpose site support facilities such as security installations, utilities, roads, and service buildings. Also, the landlord program continues to maintain site fire and safety alarm systems. A major enhancement of site security systems and facilities is underway; it will be completed in FY 1988. The INEL Security Upgrade Project to provide accommodations for security personnel and equipment, to harden facilities, and to improve site access control will continue in FY 1987. Construction of the Test Reactor Area Security System Upgrade to meet requirements for detection and prevention of intrusion will also continue in FY 1987. Within the landlord program, we will also begin in FY 1987 a project to eliminate the discharge of radioactively- contaminated waste water from the Test Reactor Area to the soil. The currently-used seepage basin will be replaced by process equipment to maximize recycle, and a plastic-lined evaporation pond for the residual effluent.

DECONTAMINATION AND DECOMMISSIONING

We are responsible for about 226 contaminated surplus defense facilities, including reactors, reprocessing plants, and waste management facilities. The facilities have been placed in a safe condition and are routinely monitored and maintained. Our program emphasizes the safe management of these facilities, stressing beneficial reuse of structures, reduction of future maintenance costs, and recovery of valuable materials where cost effective. For FY 1987 we will continue to monitor and maintain all surplus defense facilities and continue high priority decommissioning work at INEL, the Mound Facility, ORNL, and Richland with particular emphasis on facility reuse and cost effectiveness. In FY 1987, we plan to issue a draft EIS for decommissioning the surplus production reactors at Richland. The preferred alternative is in-place stabilization of the reactor block and entombment with a soil overburden. In FY 1987, we also plan to complete characterization studies and remedial action design for the Grand Junction Treasure Island Site uranium ore residues which were generated in support of Defense Programs activities and are a source of groundwater contamination. Remedial action is scheduled to begin in FY 1988.

TRANSPORTATION OPERATIONS

We are also responsible for the Department-wide transportation management program. Great emphasis is placed upon assuring the safe, secure, environmentally acceptable, efficient, and economic shipment of DOE materials for all Departmental programs in compliance with applicable Federal and State laws and regulations. This responsibility includes operational aspects of materials transportation, radioactive materials packaging and shipping operations, and classification of explosives for transportation.

In FY 1987, the Transportation Management program will continue to support data automation and training programs, as well as activities necessary to ensure the most economic shipping rates. Savings are anticipated in FY 1987 of $5-10 million in shipping costs Department-wide. Hazardous materials packaging quality assurance will be maintained to assure all packages meet requirements.

During FY 1987, field evaluations will be performed to assure that DOE complies fully with all applicable regulations and requirements. Regulatory compliance training programs will continue to be modified as necessary to accommodate any deficiencies or changed regulations, plus automation and videotaping of present training programs for local hazardous materials shippers' use. In addition, a program will be funded in FY 1987 to implement a more comprehensive management information and outreach program with State and local governments, Indian tribes, and other entities that have expressed concerns regarding DOE radioactive materials shipments through their jurisdictions. Development of a basic traffic management training manual will be completed and application of the Numerax freight rate analysis system in the DOE-wide procurement process is anticipated.

LONG-TERM WASTE MANAGEMENT TECHNOLOGY

This program addresses the long-term management and disposal of defense wastes. The program is consistent with policies set forth in the Defense Waste Management Plan for permanent disposal of defense high-level waste and TRU waste. The Long-Term Waste Management Technology Program has been expanded to include hazardous chemical defense waste management to respond to the increased attention at DOE sites in managing such waste in compliance with appropriate Environmental Protection Agency (EPA) regulations.

HIGH-LEVEL WASTE TECHNOLOGY

We are developing the technology for the long-term management of defense high-level waste at DOE sites. Our first emphasis is on the DWPF at Savannah River and second is the proposed Hanford Waste Vitrification Plant (HWVP) at Richland. The FY 1987 program will continue the sequential approach for high-level waste management with Savannah River first and efforts at Richland increasing to support implementation of waste disposal strategies. Activities at Idaho will be limited to feasibility studies for the various alternatives and waste volume reduction technologies for future consideration. Laboratory tests will continue to describe and document the predicted behavior of the DWPF glass waste form in geologic media. During FY 1987 emphasis will be on planning, development, selection, and implementation of the long-term technology for high-level waste at Richland. Efforts will focus on the conceptual design of the HWVP, which will provide the same service as the DWPF.

DEFENSE WASTE PROCESSING FACILITY

The DWPF will immobilize defense high-level waste at Savannah River for storage, transportation, and disposal in a geologic repository. The sludge fraction of the high-level waste, which contains most of the hazardous radionuclides and virtually all of the long-lived activity, will be immobilized directly in borosilicate glass after mercury is extracted. Removing the mercury will improve glassmaking operations and also provide this material for reuse in nuclear production operations.

The activity in the soluble salt fraction of the waste, primarily radioactive cesium, will be separated by precipitation in the tank farm. The decontaminated salt will be solidified and disposed of on the Savannah River site to free-up storage tank space. When the DWPF is operational in FY 1990, we will begin to work off the backlog of high-level waste from production operations at Savannah River, reaching a steady-state operation in about 10-15 years.

Construction of the DWPF began ahead of schedule in October 1983 and a recent photograph is shown in Chart 25. By the end of FY 1987, final design will be more than 97 percent complete and construction of the main process building and support facilities will be about 85 percent complete. Construction activity will peak in late FY 1986, with about 2,000 construction workers on site. We are requesting $135 million for the project in FY 1987, a $22 million decrease from FY 1986. With the requested funding, project completion is scheduled for the end of FY 1989, with hot startup in early FY 1990. The current total estimated cost remains at $870 million, but is under review because of recent budget reductions and schedule extension. Operation of facilities to solidify decontaminated salt solution for disposal as low-level waste will begin in mid-FY 1988. However, this action is dependent on permitting by the State of South Carolina.

It is very important that the current schedule for DWPF be maintained. Tank space in which to store high-level waste is limited, and we must continue to remove waste from the old tanks before problems develop. Major delays in the DWPF project, including the start of saltstone operations, could adversely impact our ability to support nuclear materials production.

HANFORD WASTE VITRIFICATION PLANT

Since the mid 1940's nuclear fuel has been irradiated and processed at the Richland site to produce nuclear materials for national defense programs. The liquid radioactive waste from fuel processed has been neutralized and stored in large underground steel tanks on an interim basis pending decisions on the timing and methods for permanent disposal.

The proposed Hanford Waste Vitrification Plant (HWVP) will convert high-level waste to a glass form for permanent disposal. It serves the same function and is based on the same process technology as the DWPF now under construction at Savannah River. While some refinements and testing are needed, the basic technology for vitrification of Richland high-level waste is in hand and facility design and construction can be undertaken with confidence.

Design support, engineering research and development, and conceptual design will continue in FY 1987 for a waste immobilization facility to prepare Richland high-level waste for disposal. Existing technology and design data from the DWPF is being used to the maximum extent practical to reduce cost. Basic process requirements are similar to the DWPF, except that an existing waste preparation facility at the Richland B-Plant will be used instead of in-tank processing. The decontaminated salt fraction will be immobilized and disposed of as low-level waste. Conceptual design of the HWVP will be completed in FY 1987.

TRANSURANIC WASTE TECHNOLOGY

The primary purpose of the TRU Technology Program is to support the disposal of TRU waste in WIPP. During FY 1987, TRU waste technology activities will include: (1) development of certification technology for remote-handled and special case wastes, (2) evaluation of a remote-handled waste transport system, (3) continued development of on-site buried waste and in-situ vitrification technologies, and (4) demonstration of mobile non-destructive examination and assay (NDE/NDA) systems.

LOW-LEVEL WASTE TECHNOLOGY

The Low-Level Waste Technology Program supports DOE waste operations for the disposal of low-level solid wastes. This program will assist disposal operations in meeting the DOE orders by increasing assurance and developing guidance for a systematic low-level waste management program. The objectives of this generic applied technology program are to: improve techniques for disposal by shallow land burial; provide supporting documentation in assuring compliance with DOE criteria for disposal by shallow land burial; develop cost effective treatment processes to stabilize certain low-level waste streams and reduce volumes by generation avoidance; and evaluate disposal concepts such as greater confinement for application at DOE sites. In FY 1987 funding will provide for increased emphasis on disposal site closure technology to reduce long-term active maintenance costs, development of disposal technology to improve waste forms, and systems evaluation for overall performance assessment.

HAZARDOUS CHEMICAL DEFENSE WASTE MANAGEMENT

The Hazardous Chemical Defense Waste Management program supports DOE site operations for the treatment, storage, and disposal of hazardous wastes generated by Defense Programs activities. This program will also support the hazardous waste efforts required to cost-effectively comply with EPA regulations in implementation of the Comprehensive Environmental Response, Compensation, and Liability Act, the Resource Conservation and Recovery Act, and other environmental legislation. The objectives of this generic technology application program are to provide for the identification and application of existing techniques in handling hazardous waste from currently generated Defense Programs waste streams and for the environmental restoration of inactive Defense Programs hazardous waste sites. Program elements consist of waste generation reduction, waste treatment, chemical recycle and utilization, disposal alternatives, monitoring and modeling, probabilistic risk assessment, and environmental restoration. In

FY 1987 the program will complete conceptual design and bench-scale testing for treatment of nitrates, will complete preliminary testing of acceptable monitoring techniques for organic waste streams, and will define processes for cleanup and reclamation of waste acids.

TRANSPORTATION RESEARCH AND DEVELOPMENT

This program seeks to assure that safe, efficient, and reliable transportation equipment and systems will be available for defense nuclear wastes. Packaging development, packaging technology development, testing, risk analyses, and other related activities are conducted at the DOE Transportation Technology Center at Sandia National Laboratories, Albuquerque, New Mexico.

Work includes a base technology program which has DOE-wide applicability for all DOE nuclear program transportation needs. This base technology is essential to establish and support DOE technical positions regarding regulatory provisions on packaging design, analysis, test, and operation. The base technology program includes packaging design, development, materials investigations, standards development, testing, test facilities development, operational safety and risk analyses, EIS preparation, logistics and economic analyses, regulatory issues analyses, and data base development. Because of the close relationship of the base technology program with regulatory technical provisions, close coordination with the DOE Office of Civilian Radioactive Waste Management regarding its packaging development program is a critical element of this work.

FY 1986 will see completion of the development of the prototype TRUPACT packaging intended primarily for transporting contact-handled TRU waste. Needed design modifications to limit the inner door seal temperatures during thermal testing have been completed. A successful fire retest to check the modified design was completed this month. The first TRUPACT prototype unit, shown in Chart 26 will complete an initial demonstration period in FY 1986. This demonstration will continue with two additional prototype units as they become available in mid-year. TRUPACT fleet unit design will commence in FY 1986. Value engineering results and second generation modifications will be introduced for improved efficiency and decreased unit cost.

In FY 1987, TRUPACT fleet unit fabrication will commence. The schedule for fleet unit fabrication will be controlled by completion of DOE certification of the prototype unit and, subsequently, the fleet unit; and by available funding under the WIPP program, the major user.

Work will continue in FY 1986 on the defense high-level waste cask development program. The defense high-level waste cask half-scale model has been fabricated and will be tested for regulatory compliance. Development for high-level waste application will be completed during FY 1986. The high-level waste cask will be used to transport high-level waste glass logs from DWPF to a repository. Work leading to its possible application in transporting remote-handled TRU waste to WIPP continues in FY 1986.

TERMINAL STORAGE--WASTE ISOLATION PILOT PLANT

The Waste Isolation Pilot Plant (WIPP), now under construction near Carlsbad, New Mexico, will provide a research and development facility to demonstrate the safe disposal of radioactive waste from national defense programs. The WIPP is authorized by Public Law 96-164 and is exempt from licensing by the Nuclear Regulatory Commission (NRC).

The primary objective of WIPP is to demonstrate, through a full-scale pilot plant, the technical and operational methods for permanent isolation of defense-generated TRU radioactive waste. The facility is designed to receive, inspect, emplace, and store defense waste. It will have the capability of disposing of defense TRU waste and conducting experiments with defense-generated high-level waste.

The construction of permanent surface and underground facilities started in July 1983. Much construction progress has been made, as shown in Chart 27. Enlargement of the waste haulage shaft to its final 19-foot diameter has been completed. The third shaft for exhausting underground ventilation air has also been completed. Major contracts for constructing access roads, a rail spur, and a 31-mile water pipeline were completed. Mining for the underground experimental areas has been initiated, and 12 rooms have been completed. The main waste handling building was started in mid-1984 and will be completed by September 1986. Completion of all major surface construction is scheduled for December 1986. A test and checkout period will be followed with full-scale waste receiving operations targeted for October 1988. WIPP operations are, however, dependent on withdrawal of the Federally-owned site for exclusive DOE use for waste disposal. The Department of Interior is expected to take the necessary action during FY 1986 to provide DOE with the required authority.

Research and development activities will continue to emphasize in-situ nonradioactive experiments. These experiments and demonstrations will establish the technical basis for future defense waste disposal in bedded salt. This work will be based on an extensive background of predictive model development and laboratory/field testing. Specific technology experiments will include thermal/structural interaction, operations demonstration, and waste package performance.

Emergency response training and emergency response exercises have been held. Such activities will continue. A Quality Assurance Audit was conducted to ensure safety and efficiency during disposal operations and concurrent mining operations. Audit findings and recommendations were adopted.

FY 1987 activities will focus on completion of commitments to the State of New Mexico, continuation of in-situ experimentation, equipment fabrication and delivery, preoperational monitoring, and integrated systems checkout and testing. Assuming project activities continue successfully and land withdrawal is received on schedule, WIPP will be ready to receive radioactive waste in October 1988 as planned.

This completes my presentation. I shall be happy to answer any questions you may have on either the Nuclear Materials Production Program or the Defense Waste and Byproducts Management program.

DEFENSE PROGRAMS
NUCLEAR MATERIALS

FY 1987 BUDGET REQUEST
(DOLLARS IN MILLIONS)

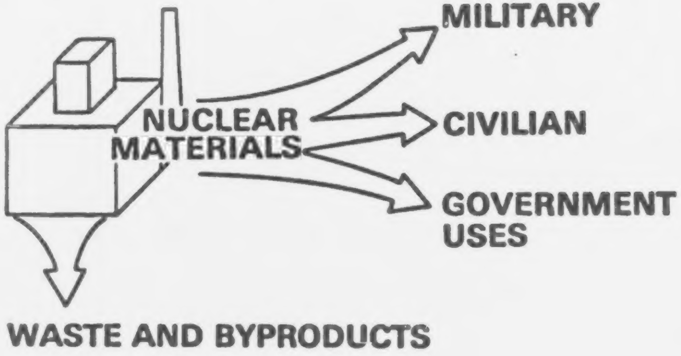
	FY 1986		FY 1987	
	APPROP.	ADJUST. APPROP.	AUTH.	APPROP.
MATERIALS PRODUCTION	$1,862.3	$1,768.1	$2,047.9	$2,066.1
DEFENSE WASTE AND BYPRODUCTS MANAGEMENT	655.9	618.4	689.1	704.4
TOTAL	$2,518.2	$2,386.5	$2,737.0	$2,770.5

Chart 1

65(62)

DEFENSE PROGRAMS — NUCLEAR MATERIALS

OBJECTIVE



NUCLEAR MATERIALS

MILITARY

CIVILIAN

GOVERNMENT USES

WASTE AND BYPRODUCTS

Chart 2

65(63)

Chart 3

[deleted]

65(65)

Chart 4

[deleted]

Chart 5

[deleted]

65(67)

Chart 6

[deleted]

Chart 7

[deleted]

Chart 8

[deleted]

DEFENSE NUCLEAR FUEL CYCLE

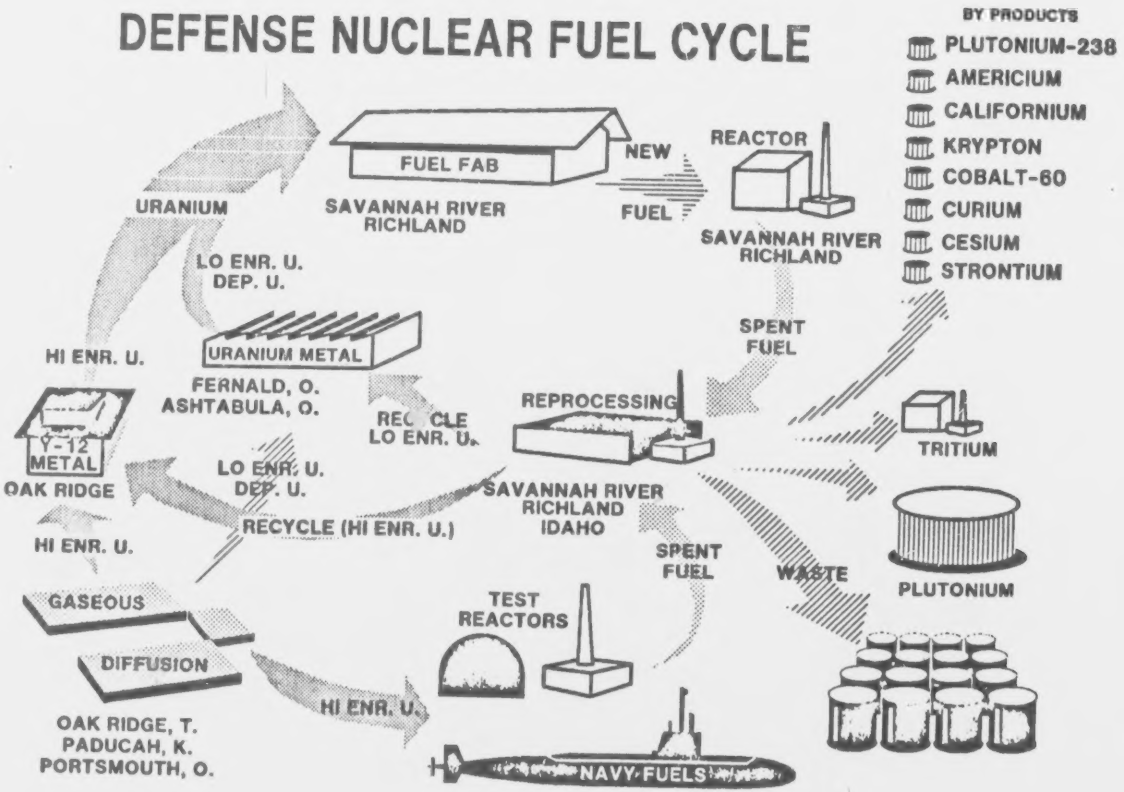
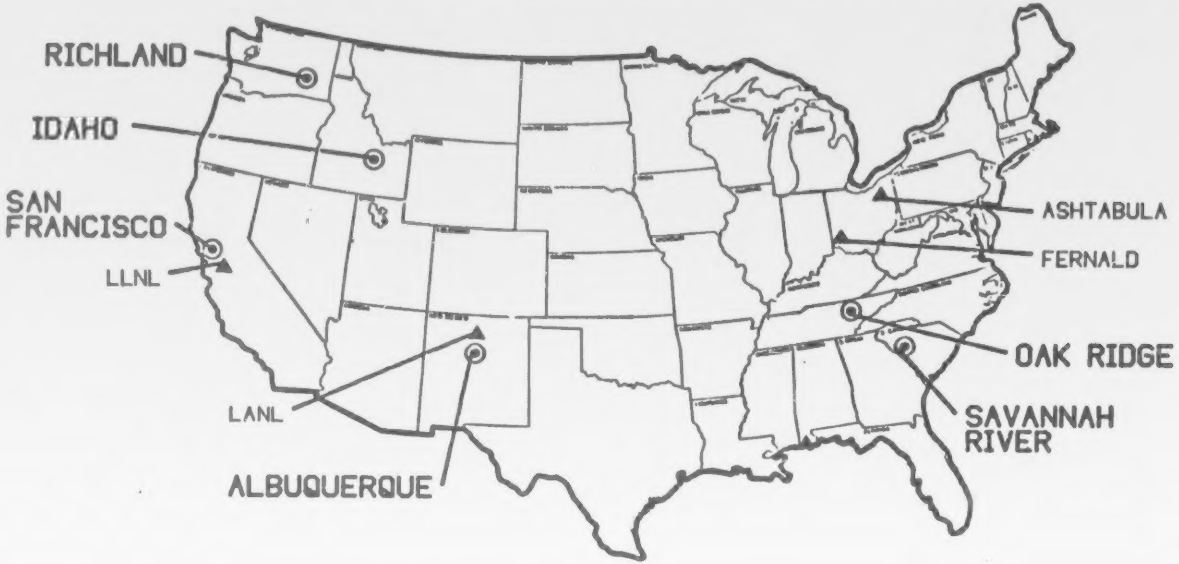

BY PRODUCTS
PLUTONIUM-238
AMERICIUM
CALIFORNIUM
KRYPTON
COBALT-60
CURIUM
CESIUM
STRONTIUM
FUEL FAB
SAVANNAH RIVER RICHLAND
NEW FUEL
REACTOR
SAVANNAH RIVER RICHLAND
URANIUM
LO ENR. U. DEP. U.
URANIUM METAL
FERNALD, O. ASHTABULA, O.
HI ENR. U.
Y-12 METAL
OAK RIDGE
SPENT FUEL
REPROCESSING
RECYCLE LO ENR. U.
LO ENR. U. DEP. U.
RECYCLE (HI ENR. U.)
SAVANNAH RIVER RICHLAND IDAHO
TRITIUM
PLUTONIUM
WASTE
HI ENR. U.
GASEOUS
DIFFUSION
OAK RIDGE, T. PADUCAH, K. PORTSMOUTH, O.
SPENT FUEL
TEST REACTORS
HI ENR. U.
NAVY FUELS

Chart 9

65(70)

DEFENSE PROGRAMS — NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION SITES


RICHLAND
IDAHO
SAN FRANCISCO
LLNL
LANL
ALBUQUERQUE
ASHTABULA
FERNALD
OAK RIDGE
SAVANNAH RIVER

05/02/84 MAP.NMP

Chart 10

65(71)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

FY 1987 BUDGET REQUEST
COMMITMENTS

- ENVIRONMENTAL IMPROVEMENTS
  - 5 NEW PROJECTS IN FY 1987 FOR ENVIRONMENTAL UPGRADE
    - 87-D-149, REDUCED CHEMICAL DISCHARGE, RL
    - 87-D-150, EFFLUENT TREATMENT, RL
    - 87-D-152, ENVIRONMENTAL PROTECTION, PLANTWIDE, SR
    - 87-D-156, RX EFFLUENT COOLING WATER THERMAL MITIGATION, SR
    - 87-D-159, ENVIRONMENTAL, HEALTH, AND SAFETY IMPROVEMENTS, FMPC
- SAFEGUARDS AND SECURITY IMPROVEMENTS

Chart 11

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET REQUEST
(DOLLARS IN MILLIONS)

	FY 1986		FY 1987	
	APPROP.	ADJUST. APPROP.*	AUTH.	APPROP.
OPERATING EXPENSES				
REACTOR OPERATIONS	$ 570.7	$ 541.1	$ 616.7	$ 616.7
PROCESSING OF NUCLEAR MATERIALS	483.1	464.8	499.8	499.8
SUPPORTING SERVICES	256.6	249.9	252.5	252.5
PROGRAM DIRECTION	21.3	21.3	22.9	22.9
URANIUM ENRICHING	184.0	169.6	204.5	204.5
TOTAL OPERATING EXPENSES	$1,515.7	$1,446.7	$1,596.4	$1,596.4
CAPITAL EQUIPMENT	121.4	109.5	126.1	126.1
CONSTRUCTION	225.2	211.9	325.4	343.6
GRAND TOTAL	$1,862.3	$1,768.1	$2,047.9	$2,066.1

*REFLECTS GRAMM-RUDMAN-HOLLINGS REDUCTIONS

Chart 12

65(73)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET REQUEST
CHANGES FROM
FY 1986 APPROPRIATION
(DOLLARS IN MILLIONS)

FY 1986 APPROPRIATION (ADJUSTED)	$1,768.1
• ESCALATION	+ 79.0
• FY 1986 BASE PROGRAM CONTINUATION INCLUDING REACTOR OPERATIONS, PROCESSING, SUPPORT FACILITIES, SAFETY, ETC.	+ 98.5
• ENVIRONMENTAL	+ 16.5
• SECURITY	+ 20.1
• PRODUCTIVITY RETENTION AND RESTORATION	+ 43.3
• NUCLEAR MATERIAL PRODUCTION INITIATIVES INCLUDING: — PROCESS FACILITY MODIFICATIONS — SPECIAL ISOTOPE SEPARATION	+ 19.2
• NAVAL REACTORS URANIUM REQUIREMENTS	+ 21.4
FY 1987 REQUEST	$2,066.1

Chart 13

65(74)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

FY 1987 BUDGET REQUEST HIGHLIGHTS

- CONTINUES CURRENT BASE PRODUCTION ACTIVITIES
- SUPPORTS PRODUCTION INITIATIVES BEGUN IN PREVIOUS YEARS
  - FUNDS PRODUCTIVITY RETENTION PROGRAM
  - FUNDS FACILITY RESTORATION AND IDAHO RESTORATION PROGRAMS
  - CONTINUES SPECIAL ISOTOPE SEPARATION DEVELOPMENT PROGRAM
  - CONTINUES REACTOR PRODUCTION ASSURANCE ACTIVITIES
- FUNDS URANIUM ENRICHING SERVICES TO MEET MATERIALS PRODUCTION AND NAVAL REACTORS REQUIREMENTS
- FUNDS SECURITY AND ENVIRONMENTAL NEEDS

Chart 14

65(75)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET SUMMARY
(DOLLARS IN MILLIONS)

	FY 1986		FY 1987	
	APPROP.	ADJUST. APPROP.*	AUTH.	APPROP.
BASE ACTIVITIES				
CURRENT OPERATIONS	$1,248.8	$1,185.7	$1,336.9	$1,339.6
ENVIRONMENTAL ACTIVITIES	92.1	91.3	111.9	111.9
SECURITY	136.6	133.3	151.6	159.3
SUBTOTAL	$1,477.5	$1,410.3	$1,600.4	$1,610.8
PRODUCTION INITIATIVES				
PRODUCTIVITY RETENTION	20.7	19.6	71.6	76.2
RESTORATION	46.7	42.4	3.5	7.8
IDAHO RESTORATION	20.1	18.6	43.1	41.5
SPECIAL ISOTOPE SEPARATION	83.8	78.9	75.9	75.9
PROCESS FACILITY MODIFICATIONS	21.7	20.9	46.7	47.2
REACTOR PRODUCTION ASSURANCE	17.5	17.0	16.7	16.7
SUBTOTAL	$ 210.5	$ 197.4	$ 257.5	$ 265.3
OTHER				
NAVAL REACTOR SUPPORT	$ 174.3	$ 160.4	$ 190.0	$ 190.0
TOTAL MATERIALS PRODUCTION	$1,862.3	$1,768.1	$2,047.9	$2,066.1

*INCLUDES GRAMM-RUDMAN-HOLLINGS REDUCTIONS

Chart 15

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET REQUEST
BASE ACTIVITIES

- CURRENT OPERATIONS
  - 4 REACTORS, 2 CHEMICAL PROCESSING CANYONS AT THE SAVANNAH RIVER PLANT
  - N REACTOR AND PUREX FUEL PROCESSING PLANT AT RICHLAND
  - CHEMICAL PROCESSING PLANT AND FLUORINEL DISSOLUTION AND STORAGE FACILITY AT IDAHO
  - FEED PRODUCTION PLANTS AT FERNALD AND ASHTABULA, OHIO, AND OAK RIDGE, TENNESSEE
  - BLENDING
- ENVIRONMENTAL PROTECTION
- SECURITY

Chart 16

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

FY 1987 BUDGET REQUEST

PRODUCTION INITIATIVES

- PRODUCTIVITY RETENTION
- RESTORATION PROGRAM
- IDAHO RESTORATION
- PROCESS FACILITY MODIFICATIONS
- SPECIAL ISOTOPE SEPARATION DEVELOPMENT
- REACTOR PRODUCTION ASSURANCE ACTIVITIES

Chart 17

65(78)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION
FY 1987 BUDGET REQUEST
URANIUM ENRICHING
(DOLLARS IN MILLIONS)

	FY 1986	FY 1987
NAVAL REACTORS URANIUM	$160.4	$190.0

- PURCHASE HIGHLY ENRICHED URANIUM FROM PORTSMOUTH GASEOUS DIFFUSION PLANT TO SUPPORT NAVAL REACTORS PROGRAM [deleted] URANIUM AT 97.3 PERCENT U-235 ENRICHMENT)

Chart 18

65(79)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

NUCLEAR MATERIALS PRODUCTION

FY 1987 BUDGET REQUEST

SUMMARY OF PLANNED ACTIVITIES

NUCLEAR MATERIALS PRODUCTION PLANS TO CONTINUE:

- ONGOING BASE PRODUCTION ACTIVITIES
- SAFETY, SECURITY, AND ENVIRONMENTAL ACTIVITIES
- RESTORATION PROGRAMS AT FOUR SITES
- SPECIAL ISOTOPE SEPARATION DEVELOPMENT
- REACTOR PRODUCTION ASSURANCE ACTIVITIES
- SUPPLY OF URANIUM FOR NAVAL REACTORS

Chart 19

65(80)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT

RADIOACTIVE WASTE TYPES

HIGH-LEVEL WASTE:	WASTE FROM REPROCESSING CHARACTERIZED BY HIGH HEAT AND LONG LASTING HAZARD.
TRANSURANIC WASTE:	LOW-LEVEL WASTE CONTAMINATED WITH CERTAIN LONG-LIVED ALPHA ACTIVITY IN EXCESS OF 100 nCi/g.
LOW-LEVEL WASTE:	OTHER WASTE CONTAMINATED WITH SHORT-LIVED RADIOACTIVITY. INCLUDES CONTAMINATED EQUIPMENT, COMPONENTS, CLOTHING, TRASH, SLUDGES, ETC.

GENWP 13 001

Chart 20

65(81)

DEFENSE PROGRAMS - NUCLEAR MATERIALS

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT HIGH-LEVEL WASTE AND TRANSURANIC WASTE STORAGE SITES

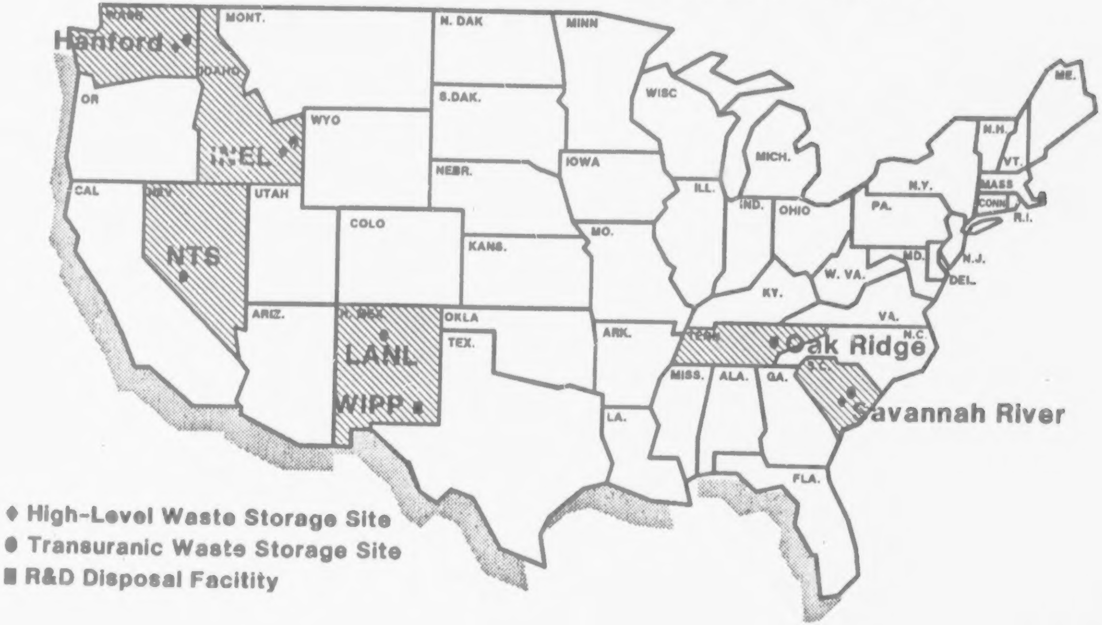

Hanford
INEL
NTS
LANL
WIPP
Oak Ridge
Savannah River
WASH.
MONT.
N. DAK
MINN
IDAHO
OR
S.DAK.
WISC
WYO
MICH.
IOWA
NEBR.
N.Y.
CAL
NEV.
UTAH
ILL.
IND.
OHIO
PA.
COLO
KANS.
MO.
MD.
N.J.
DEL.
W. VA.
KY.
VA.
ARIZ.
N. MEX.
OKLA
TEX.
ARK.
TENN.
N.C.
S.C.
MISS.
ALA.
GA.
LA.
FLA.
ME.
N.H.
VT.
MASS
CONN
R.I.
♦ High-Level Waste Storage Site
● Transuranic Waste Storage Site
■ R&D Disposal Facitity

Chart 21

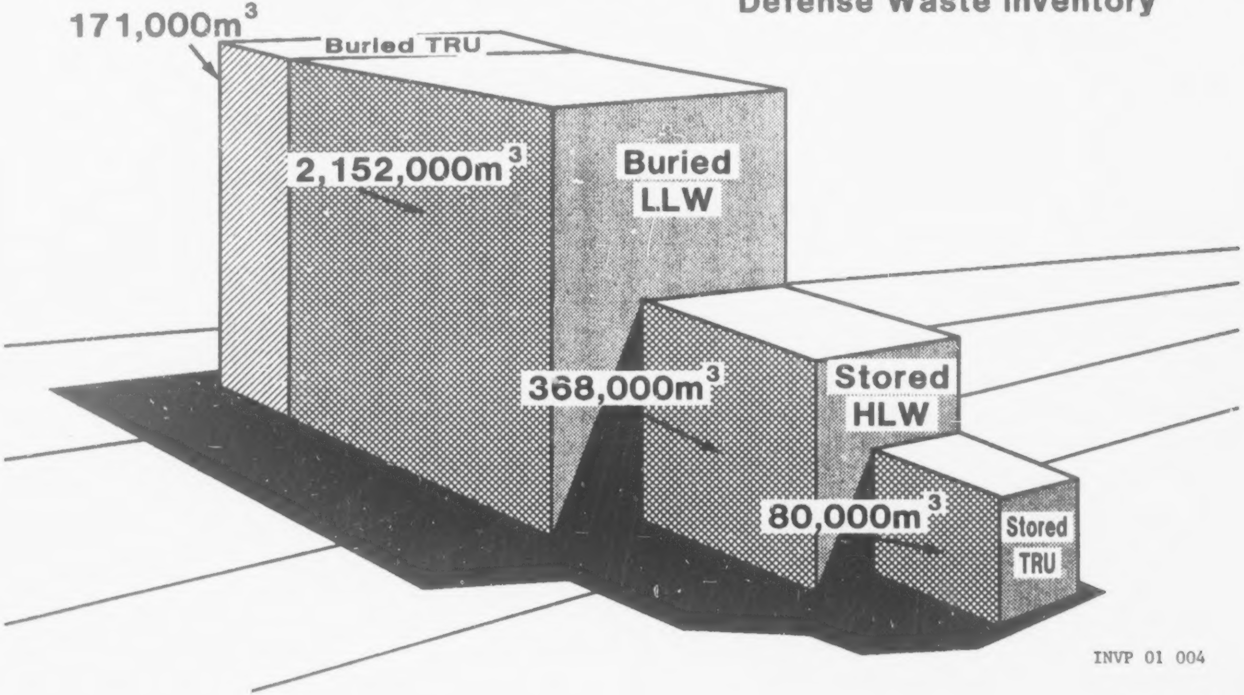
GENWP 13 014

65(82)

DEFENSE PROGRAMS-NUCLEAR MATERIALS

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT

Defense Waste Inventory



INVP 01 004

Chart 22

65(83)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT
FY 1987 BUDGET REQUEST
(DOLLARS IN MILLIONS)

	FY 1986		FY 1987	
	APPROP.	ADJUST. APPROP.	AUTH.	APPROP.
OPERATING EXPENSES				
INTERIM WASTE OPERATIONS	$271.0	$262.2	$324.7	$324.7
LONG-TERM WASTE MANAGEMENT TECHNOLOGY	94.5	89.7	88.8	88.8
TERMINAL STORAGE	25.1	24.0	39.1	39.1
PROGRAM DIRECTION	2.4	2.4	2.4	2.4
TOTAL OPERATING EXPENSES	393.0	378.3	455.0	455.0
CAPITAL EQUIPMENT	36.0	33.8	37.8	37.8
CONSTRUCTION	226.9	206.3*	196.3	211.6
TOTAL	$655.9	$618.4	$689.1	$704.4

*INCLUDES $9.2 MILLION REDUCTION FROM PRIOR-YEAR CONSTRUCTION PROJECTS

Chart 23

65(84)

DEFENSE PROGRAMS
NUCLEAR MATERIALS

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT

CHANGES FROM FY 1986 APPROPRIATION

(DOLLARS IN MILLIONS)

FY 1986 ADJUSTED APPROPRIATION	$ 618.4
• ESCALATION	+ 21.7
• PROVIDES FOR PREOPERATIONAL SUPPORT DWPF VITRIFICATION AND SALTSTONE FACILITIES AT SAVANNAH RIVER	+ 26.1
• TRANSITION WASTE ISOLATION PILOT PLANT FROM CONSTRUCTION TO OPERATIONS	+ 13.9
• SUPPORT OPERATION OF IDAHO TRU PROCESSING FACILITIES	+ 3.7
• PROVIDES FOR B-PLANT OPERATIONS AND GROUT ACTIVITIES AT RICHLAND	+ 5.3
• SUPPORT WASTE TRANSFER OPERATIONS AT SAVANNAH RIVER AND RICHLAND	+ 9.6
• CRITICAL NEW CONSTRUCTION PROJECTS	+ 15.9
• OTHER ADJUSTMENTS	– 10.2
FY 1987 REQUEST	$ 704.4

Chart 24

65(85)

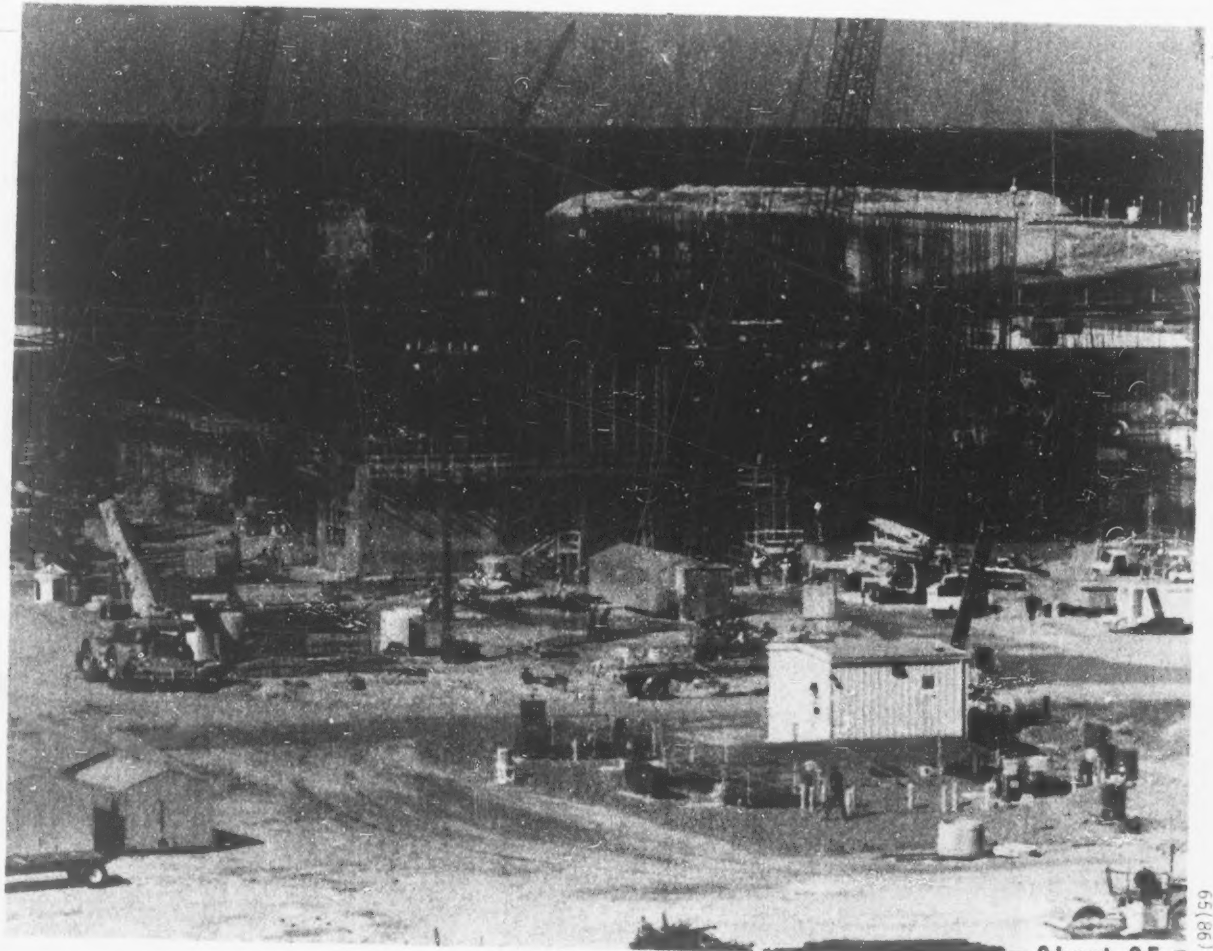


Chart 25

65(86)

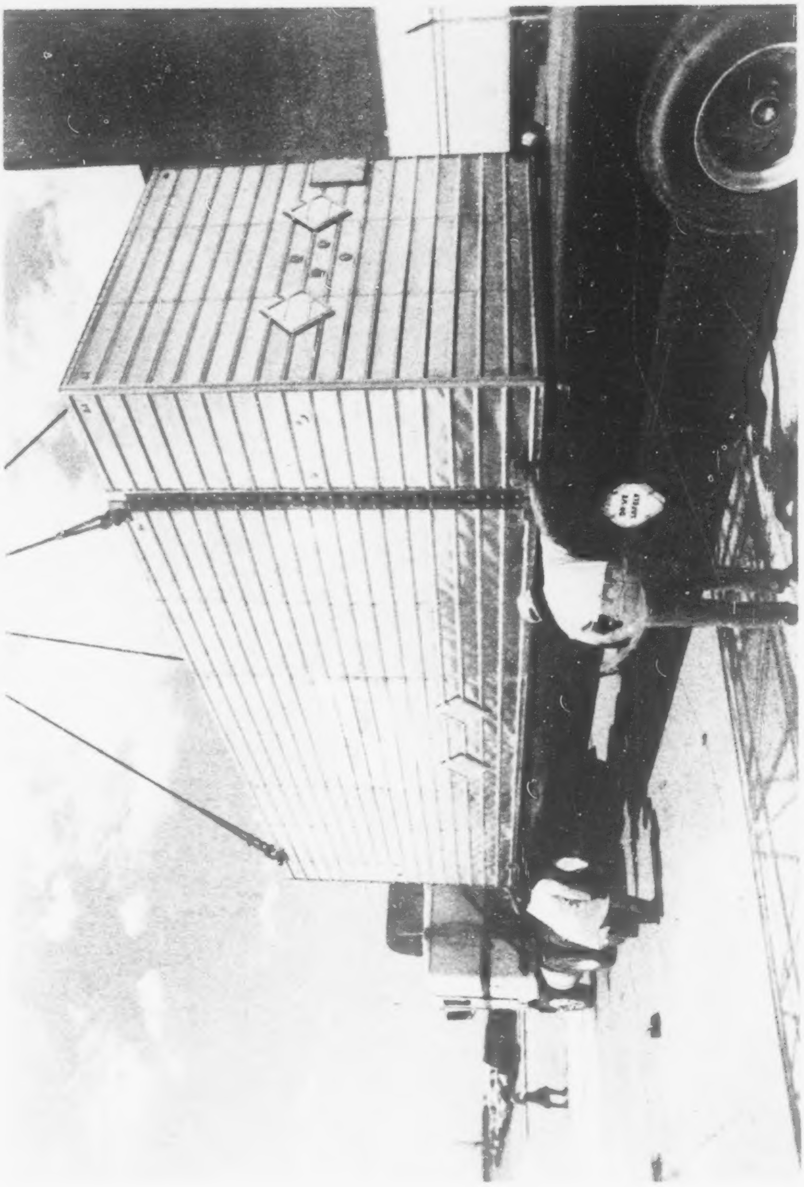
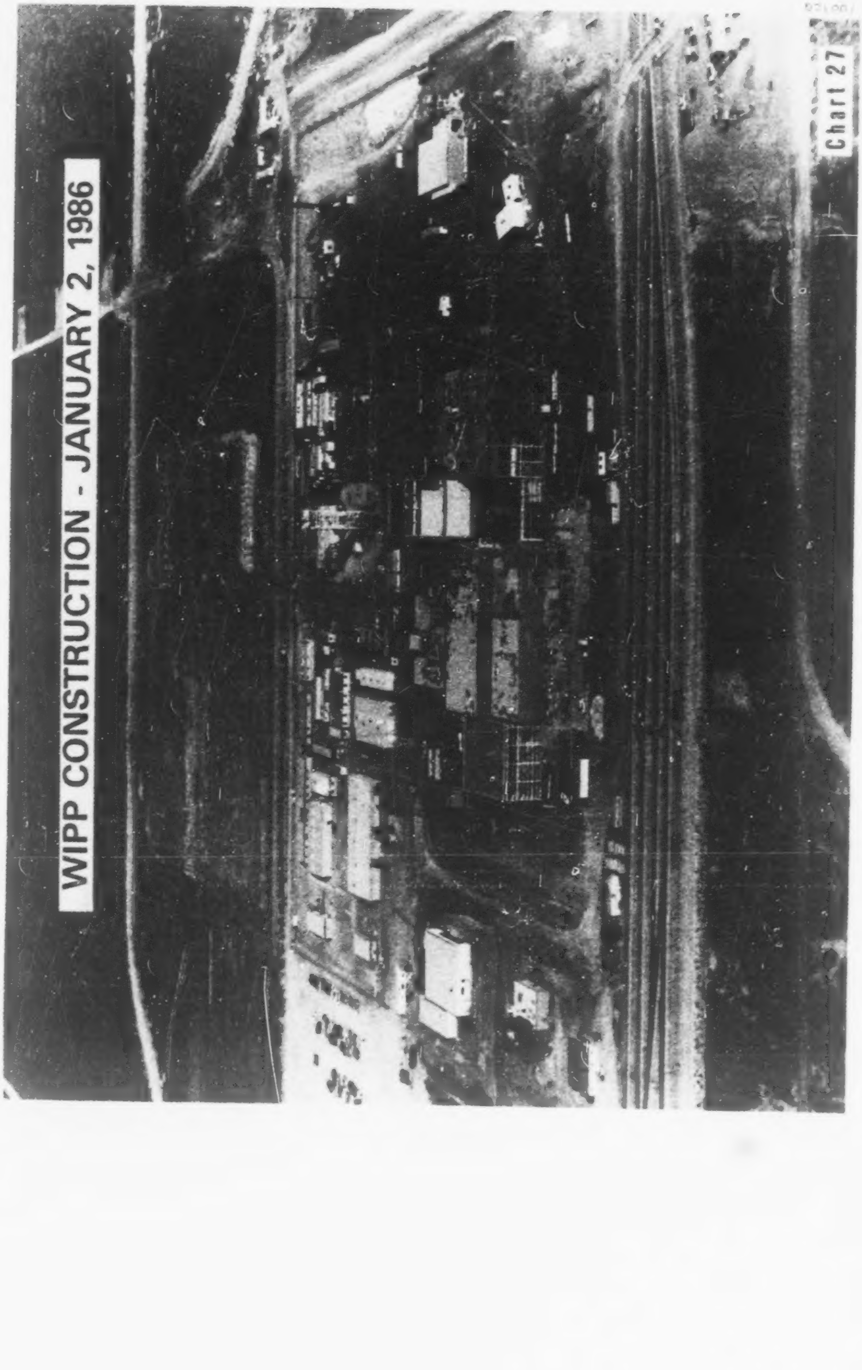


Chart 26



WIPP CONSTRUCTION - JANUARY 2, 1986

Chart 27

MONDAY, MARCH 17, 1986.

EXECUTIVE SESSION

ATOMIC ENERGY DEFENSE ACTIVITIES

WITNESSES

SYLVESTER J. FOLEY, JR., ASSISTANT SECRETARY FOR DEFENSE PROGRAMS

DR. RICHARD L. WAGNER, JR., CHAIRMAN, MILITARY LIAISON COMMITTEE TO DOE AND ASSISTANT TO THE SECRETARY OF DEFENSE (ATOMIC ENERGY)

LT. GEN. JAMES A. ABRAHAMSON, USAF, DIRECTOR, STRATEGIC DEFENSE INITIATIVE ORGANIZATION

MAJ. GEN. GEORGE K. WITHERS, JR., USA, DEPUTY ASSISTANT SECRETARY FOR MILITARY APPLICATION

EDWARD V. BADOLATO, DEPUTY ASSISTANT SECRETARY FOR SECURITY AFFAIRS

Mr. BEVILL. The Committee will come to order.

The Chair recognizes Mr. Myers.

Mr. MYERS. Mr. Chairman, today and tomorrow we will be considering items of national security that are classified. I move that today's session and tomorrow's session be in executive session.

Mr. BEVILL. The clerk will call the roll.

The CLERK. Mr. Bevill.

Mr. BEVILL. Aye.

The CLERK. Mrs. Boggs.

Mrs. BOGGS. Aye.

The CLERK. Mr. Watkins.

Mr. WATKINS. Aye.

The CLERK. Mr. Whitten.

Mr. WHITTEN. Aye.

The CLERK. Mr. Myers.

Mr. MYERS. Aye.

The CLERK. Mr. Rudd.

Mr. RUDD. Aye.

The CLERK. Six votes Aye, Mr. Chairman.

Mr. BEVILL. All right, a quorum is present and the motion is carried unanimously. Only those who are properly cleared should remain in the room.

Secretary Foley, would you please verify that only those that have the appropriate clearances are in the room?

Mr. FOLEY. I do, sir.

Mr. BEVILL. We are glad to have each of you here. We will listen to each of the witnesses, and the members will be able to ask whatever questions they wish.

Mr. Secretary, please introduce the other witnesses.

Mr. **Foley**. Yes, sir. The other witnesses, starting from the left, are Mr. Ed Badolato, from my office of Security Affairs within the Defense Programs of the Department of Energy; General Ken Withers, head of my Office of Military Application. I am sure all of you know General Abrahamson from the Strategic Defense Initiative Office in the Department of Defense, and Dr. Rich Wagner, who also represents the Department of Defense and essentially is the chief scientist for the Department of Defense.

Dr. **Wagner**. I can't accept that charge.

Mr. **Bevill**. Well, we are delighted to have you. Dr. Wagner, we are going to miss you. I'm sorry to hear you will be leaving us.

Dr. **Wagner**. I will be leaving very shortly, sir.

Mr. **Bevill**. You certainly made a great contribution. We appreciate the work you have done.

Dr. **Wagner**. Thank you very much.

Mr. **Bevill**. Secretary Foley, this is your first appearance and we will be looking forward to hearing from you for many years.

Mr. **Foley**. I hope so, sir.

Mr. **Bevill**. And also, General Abrahamson, this is your first appearance, I believe.

General **Abrahamson**. Yes, sir.

Mr. **Bevill**. We are delighted to have you. Deputy Assistant Secretary Badolato, we are glad to have you with us also.

Mr. **Badolato**. Thank you, sir.

Mr. **Bevill**. This is your first time, too.

All right, Mr. Secretary, we will start off with you. You may proceed as you wish.

Opening Statement—Sylvester J. Foley, Jr.

Mr. **Foley**. Mr. Chairman, I have a prepared statement I would like to submit for the record with your concurrence, sir.

Mr. **Bevill**. Without objection, each of the witnesses may submit their prepared statements for the record and then summarize them as you wish.

Mr. **Foley**. First of all, let me say that, in my first appearance here before you, I appreciate the strong support that you and the Congress and the committee have given to the Department of Energy in the past years. I look forward to that same sort of support, because these are going to be tough times for the appropriation that we have before you today, I will cover it in some detail.

[Slide follows:]

DEPARTMENT OF ENERGY
DEFENSE PROGRAMS

FY 1987 BUDGET REQUEST
(DOLLARS IN MILLIONS)

	FY 1986		FY 1987	
PROGRAM COMPONENT	APPROP.	ADJUST. APPROP.	AUTH.	APPROP.
TOTAL/WPNS ACTIVITIES	$4333	$4111	$4566	$4664
MATERIALS PRODUCTION	1863	1768	2048	2066
DEF WASTE/BYPROD MGT	656	619	689	704
VERIFICATION & CONTROL	97	94	102	102
NUCLEAR S&S	59	57	66	67
SECURITY INVESTIGATIONS	33	32	33	33
PRIOR YEAR ADJUSTMENTS		7		
GRAND TOTAL/DP	$7041	$6688	$7504	$7636

The appropriation request amounts to $7.6 billion for our programs. In addition, there is another $600 million for the Naval Reactor Program, which Admiral McKee will testify on tomorrow.

[Slides follow:]

DEFENSE PROGRAMS MISSION
FY 87 APPROPRIATIONS REQUEST

- SUPPORT STOCKPILE MEMORANDUM
- SUPPORT PRESIDENT'S SDI PROGRAM
- ASSURE AVAILABILITY OF NUC MATERIALS
  - NEAR TERM
  - LONG TERM
- CONTINUE VIGOROUS AND BALANCED RD&T PROGRAM

S. TAYLOR 03/86

ASDP 04 034

DEFENSE PROGRAMS MISSION
FY 87 APPROPRIATIONS REQUEST (Continued)

- CONTINUE SAFE MANAGEMENT OF RADIOACTIVE WASTE
- ACCOMODATE REQUIREMENTS ASSOCIATED WITH SAFEGUARDS AND SECURITY
- COMPLY WITH ES&H LAWS AND REGS
- RESTORE, REVITALIZE, AND MAINTAIN DOE FACILITIES

S. TAYLOR [illegible]

Now, specifically breaking down our request, we support the President's stockpile memorandum. That is about $4.6 billion for weapons production. That is our number one priority, meeting the President's stockpile memorandum commitments for nuclear weapons production.

STRATEGIC DEFENSE INITIATIVE

Our number one research and development priority is to support the President's SDI program, and General Abrahamson will cover that topic in considerable detail as he goes through his testimony.

We are asking for a little over $2 billion for materials production and we work our way all the way down to the Strategic Defense Initiatives. It comes out to about 15 percent of the overall SDI budget.

So the Department of Energy's portion is about 15 percent, a large amount of money. We ramp up sharply from 1986 through 1987 to meet the milestones set forth by General Abrahamson and it is going to be tough to do. It is going to be hard for the laboratories, but we have spent time and worked very carefully with them. We believe we have a good, coherent program to meet the SDI milestones.

We must assure the availability of nuclear materials, both near term and long term. Mr. John Meinhardt will cover nuclear materials tomorrow in some detail, but it comes down essentially to having adequate amounts to produce the nuclear weapons to meet the requirements of the nation [deleted]. We need a vigorous and balanced RD&T program. This is of particular concern because in the past few years we have reduced our research and development technical base to support other activities such as the Strategic Defense Initiative. We will provide all the support we can for SDI, but the time has come when we can no longer take out of our technical base.

I have a phalanx of three laboratory directors lined up with their hands out saying you cannot take away any more from the technical base. You can't cut it back.

Research and development is necessary for keeping up with our nuclear weapons development and production. We just can't cut the research and development technical base any further.

Safe management of radioactivity is a growing problem. You and I know that we are smarter now than we were 20 or 30 years ago as we produced nuclear weapons and as we took care of waste materials. Now we have between ways of consolidating and managing our nuclear waste, but we have to clean up some of these mistakes of the past as we continue to produce nuclear weapons.

Secretary Herrington is committed to this. He has appointed a new Assistant Secretary specifically for Environment, Safety, and Health. Implicit within that commitment, of course, is the proper handling of radioactive waste as well as compliance with all of the environmental laws and regulations.

SAFEGUARDS AND SECURITY

We are accommodating the requirements for safeguards and security. I am optimistic because things are looking better. We have never compromised safety, and we never will. Safety dominates everything that we do. We can cut back in other areas but you just cannot cut back on safety.

We have an independent inspection and evaluation security team in the Department of Energy's Defense Programs that reports directly to me. This is my outside objective group that goes out and runs security tests on our field sites. One part of the inspection team runs a force on force—our force against the security force in each of these field installations.

With your strong support in the past and our initiatives of the last few years, we have enough physical security to make it very, very difficult for any terrorist or outside activist to break into our nuclear complex.

Intruders are sure losers when they attempt to penetrate our facilities [deleted]. We are making it increasingly difficult to get into the plant and to get near the nuclear material. We have procedures for shutting down the entire plant and locking everyone in. That is a strong plus which should be encouraging news for all of you; it certainly is for me.

The last issue on this chart is revitalization and restoration. I must tell you that in the three months that I have been on the job, I have had a chance to visit the field sites in many of your states. I went to the laboratories and talked to all the people. The single overriding impression that I came away with is the fragility of the entire nuclear weapons production complex.

I am very uneasy about the whole complex. It is old; we don't have many work-arounds, and not much redundancy. We have to put more money in it for maintenance just to produce the weapons required for our national security.

So, to me, a very strong priority is not to take more money out to pay for other things, but keep modernization and revitalization going. We have to keep that money going in.

[Slide follows:]

DEFENSE PROGRAMS
FY 87 APPROPRIATIONS REQUEST

IMPACT OF GRAMM-RUDMAN-HOLLINGS:

- ADJUSTED WPNS PRODUCTION SCHEDULES
- REDUCED PRODUCTION SUPPORT AND CONSTRUCTION ACTIVITIES
- REDUCED WPNS R&D TECHNOLOGY BASE AND DEVELOPMENT PROGRAMS
- ADJUSTED NUCLEAR MATERIALS PRODUCTION
- DELAYED WASTE TREATMENT AND TRANSFER FACILITIES
- MINIMIZED IMPACT ON SAFEGUARDS AND SECURITY AND ENVIRONMENTAL PROGRAMS

S. TAYLOR 03/86

ASDP 04 037

9(1)

What happened to us with the impact of Gramm-Rudman-Hollings? As we went through FY 1986 and moved into FY 1987, we took some funding reductions. We had to adjust the weapons production schedules. We worked very closely with the Department of Defense to see what could be done—if there should be any production changes. We had to determine if we needed to cut out or cut down on weapons production. You don't take $352 million out of a program and say, "OK, that's it." You have to restructure the whole program. And we did that.

We worked closely with DOD. That was of course, one of the objectives of the Blue Ribbon Task Group—to have a closer interface with the DOD.

I think Dr. Wagner and General Abrahamson will support me in their dialog that we have never had closer cooperation and interface than we have now.

We had to reduce some of our production support and some of our construction activities. The R&D technical base went down. Overall, in FY 1986, our budget was reduced by $700 million. That puts us below the FY 1985 funding level so that we had no real growth in FY 1986.

We are asking for an increase in FY 1987 of about 14 percent. That doesn't mean you get well in 1 year. You don't do that at all. This increase is necessary just to meet the requirements for weapons production and the stockpile memorandum commitments in the outyears. We need that 14 percent increase to reduce the impact of Gramm-Rudman in the outyears. The full impact of Gramm-Rudman is not going to happen for awhile.

We have adjusted all of our activities by drawing down a little here and there, but overall, we took a $352 million cut and that is a lot.

I would like to cover a few of the personnel changes in Defense Programs. I have moved people around to revitalize and strengthen the whole organization. We are going to have stronger leadership here from Washington. We will have better oversight over the National Laboratories and our contractors—not to micro-manage them, but to know more of what they are doing.

That means we have to have a better interface and strong leadership from here. That is why I have made some of these changes.

[Slide follows:]

DEFENSE PROGRAMS
FY 87 APPROPRIATIONS REQUEST

IN CONCLUSION:

- STRONG CHALLENGE TO MANAGE NUCLEAR WEAPONS COMPLEX
  - GRAMM-RUDMAN-HOLLINGS
  - IMPROVED COORDINATION AND STRATEGIC PLANNING WITH DOD
  - ENHANCED SAFEGUARDS AND SECURITY
  - ENVIRONMENTAL COMPLIANCE
- STRONG NATIONAL DETERRENT POSTURE MUST BE MAINTAINED

S. TAYLOR 03/86

ASDP 04 038

11(1)

In summary, there is a strong challenge in this tight fiscal era to successfully manage the nuclear weapons complex. Gramm-Rudman-Hollings reduced our funding going into FY 1987. It is going to be very difficult to meet the milestones of General Abrahamson's SDI program with the cuts that we took in FY 1986.

We are improving program coordination and long-term strategic planning; safeguards and security; and our environmental compliance activities. We are committed to all these things while at the same time keeping a strong national deterrent posture. To me, part and parcel of doing these things is the revitalizaton and restoration of the nuclear weapons complex I spoke of earlier. We have to invest more money into that antiquated, and in many cases, fragile production complex.

That, sir, wraps up my brief summary and I would be happy to respond to any questions, although I am told, Mr. Chairman, that you are going to hold questions until after everyone gives their presentation.

[The statement of Mr. Foley is included at the end of the hearing.]

Mr. BEVILL. Dr. Wagner.

Dr. WAGNER. Thank you, Mr. Chairman.

I would like to speak from the Vugraph machine if I may.

Mr. BEVILL. Yes.

OPENING STATEMENT—DR. RICHARD L. WAGNER, JR.

Dr. WAGNER. I would like to put the Department of Defense's flavor on what I am about to say, Mr. Chairman, if I may, not addressing myself to many of the very important internal aspects of this program but to those things which manifest themselves directly to the Department of Defense as the user of the output.

[Slide follows:]

WEAPON PRODUCTION

- FY 86 G-R-H CUTS HAVE INCREASED RISK SUBSTANTIALLY
  - — NO SLACK BETWEEN DOE PRODUCTION AND DoD DEPLOYMENT SCHEDULES
  - — WE HAVE "USED UP" OUR LOWER PRIORITY PROGRAMS
  - — PRODUCTION BASE RISK TO QUALITY/RELIABILITY OF WEAPONS
- FULL SUPPORT OF FY 87 REQUEST ESSENTIAL

The first and most important aspect that I would like to address is the weapons production. The Gramm-Rudman-Hollings cuts have increased the risk, we believe, substantially to the production program—risk in several dimensions. There is today, for the first time that I can remember in 20 years in this program, no slack between the DOE warhead production, warheads coming out the door at Pantex, and the need date for the DOD deployments.

[Deleted]. Those kinds of sensitivities are there and there is no slack left to accommodate them.

We have used up our lower priority programs, as Admiral Foley mentioned. We are working very closely together in addressing not only how to take the budget cuts but everything else related to the program.

We did, in fact, go through an agonizing process during the last few months of deciding what our lowest priority things are. We are up to the point now where I think it would be very hard to choose how to take the next cut, because you would be eating into programs that are really at the very core of the national deterrent posture, the strategic systems, or the particularly high leverage theater systems that have been politically difficult to achieve during the last few years.

A different kind of risk is the risk to the quality and reliability of the weapons. We, to our knowledge, have not seen any evidence of lower quality than the usual extremely high quality that this program produces, but we are concerned about it because of the one-line fragile nature of the production complex.

This last sentence on the Vugraph is not just a throw-away in the sense that here is someone from the Administration over here arguing for a budget. I really believe that this year this program that you are reviewing today is going to have to be fully supported in the sense of the budget that the President has sent over to you. I think that any cut in any area of it would be very damaging, very dangerous to the national security.

DOD BUDGET REQUEST

Another thing I would like to say in that regard is that if the Department of Defense budget requests are cut, I would urge you not to, in some proportional way, cut this budget request that is being addressed this afternoon for the following reason: The DOD budget request is based on one of our long-term thrusts in the Department of Defense, which is to make the nation less reliant on nuclear deterrence, to build up our conventional forces and to contribute to the allies building up their conventional forces. Inevitably, if the DOD budget request is cut, we will return to a future where we are going to have to rely more rather than less on the budget that you are addressing today. So I think there should not be any kind of proportionality. I think you will see us, unfortunately, and not because of our desire, relying more on nuclear deterrent rather than less if there are cuts in the DOD budget.

[Slide follows:]

PLUTONIUM AND TRITIUM PRODUCTION FACILITIES

LONG TERM SUPPLY OF PLUTONIUM, TRITIUM IS EXTREMELY FRAGILE

- AGING FACILITIES, POLITICALLY VULNERABLE

LEAD-TIMES TOO LONG TO USE CERTAIN REQUIREMENTS OR CERTAIN FAILURE FOR PLANNING

- CONTINGENCY PLANNING IS KEY
- SOVIET CAPABILITY IS LARGE, NEW

MUST START NOW TO PROVIDE FOR RELIABLE, FLEXIBLE CAPABILITY IN 1990s

ISOTOPE SEPARATION IS THE ONLY APPROACH WITH ADEQUATE

- OUTPUT
- FLEXIBILITY
- ON-LINE DATE (1992)

6-2044

Let me turn to a particularly sensitive area of the fragility of the DOE complex, and that is in the plutonium and tritium production facilities.

The long-term supply—I don't mean this year or next year, or perhaps even the year after—the long-term supply is extremely fragile. As Admiral Foley mentioned, the facilities are aging.

I would like to point out that those facilities are politically and physically vulnerable for a couple of reasons. One is that there is always an environmental issue about nuclear reactors. We are finding legal measures used to delay coming on line of some of these reactors. I think that is likely to occur more in the future, rather than less, as those facilities age.

Another problem with the long-term supply of these materials is that the lead times are simply too long to wait until DOD is absolutely certain what its requirements will be or until something breaks and you decide you have to fix it.

I think a fair amount of wisdom is going to be required on the part of all of us to plan on the basis of contingencies. The contingency with respect to the possibility of a Soviet breakout is very real, I think.

SOVIET CAPABILITY

The Soviet capability in plutonium and tritium production for the most part is large and new. It is true that they have dedicated military production reactors that are aging, but they have a whole series of new reactors which are not under safeguards and which could easily, by their very design, be converted to producing material for military purposes.

SPECIAL ISOTOPE SEPARATION

I believe we have to start now. We should have started, probably 4 or 5 years ago, to provide in the late years of this century and early years of the next century for a flexible, reliable capability in this regard. I think that isotope separation is the only thing on the table today that can adequately provide the output that is necessary, have the flexibility to respond to changes in circumstances, and have the earliest on-line date.

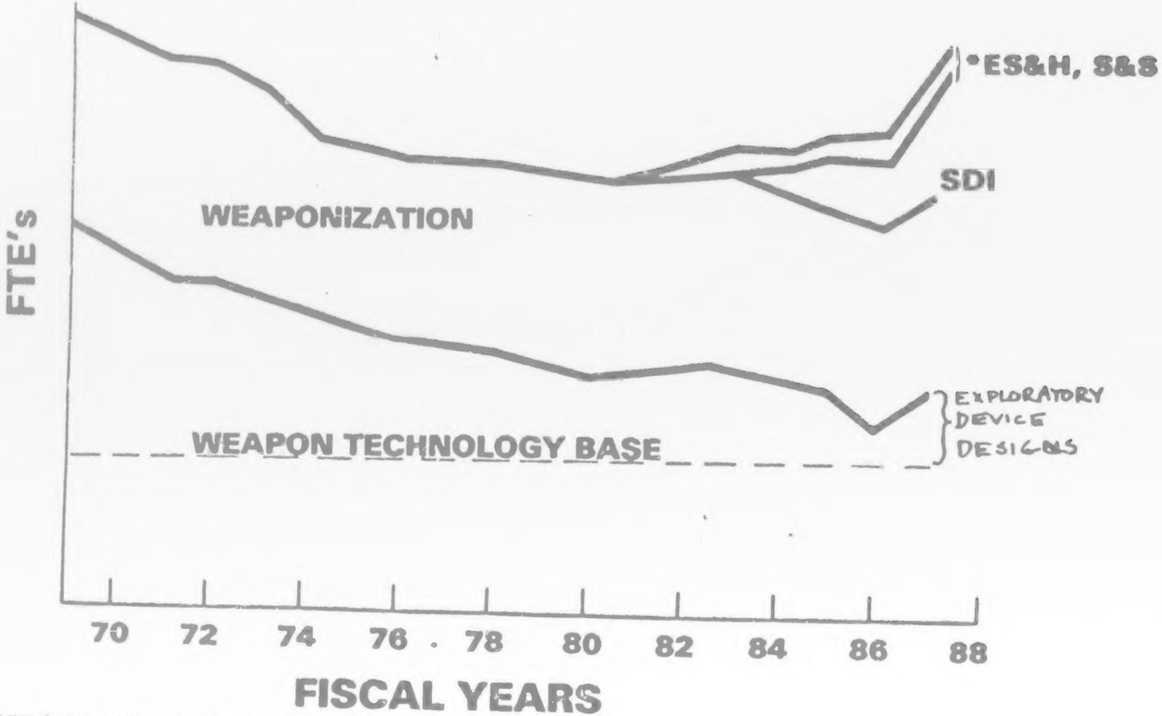
So I believe we need and would like to throw the support of the Department of Defense behind this, to start this year on a production facility embodying the isotope separation technique.

MANPOWER LEVELS

General Abrahamson will talk about the importance of the DOE part of the SDI program so I will not go through that for you other than to point out that, because of high priority of the SDI research at the laboratories and at the Nevada Test Site, it puts us in a bind in other regards.

[Slide follows:]

FY 69-87 WEAPONS RESEARCH AND DEVELOPMENT



*ESTIMATE OF ENVIRONMENTAL, SAFETY, AND HEALTH; SAFEGUARDS & SECURITY

9-2044

17(1)

This is a graph--I will take the overlay off for the moment—of the FTE manpower at the weapons laboratories since about 1969. You can see that there has been a substantial decline. In fact, by 1980 it had declined almost 40 percent from the 1969 level.

During the last few years that decline has been reversed and there have been some increases. You can see that the DOE is asking for a substantial increase in fiscal year 1987.

But you will note that much of that increase has been used up by the environment, safety, and health activities and safeguards and security, and this very important, very necessary strategic defense research which is the region between this line and this line.

The DOD places requirements for weaponizing designs for the weapons stockpile and for the production for the stockpile, which I talked about earlier. Those requirements for DOE are unavoidable and the activities at the laboratory to support those developments is shown in this middle band.

Then, of course, you can see what has happened is that the technology base has been eaten into.

There is a particularly important part of that technology base that the DOD feels a strong need to ensure that it is maintained. It is difficult to quantify. I have taken the liberty of putting a line on this chart to show you the effect that I mean, and that is exploratory device designs; the effort for that, for designs that will support our deterrence in the late 1990s and into the next century, is perhaps the most difficult to quantify of the particular outputs that DOD cares about. But, in fact, what has happened is that this activity has been reduced. This more fundamental base, which essentially keeps the doors of the laboratories open, must be maintained; and it is then in that discretionary research that the nature of decline has come. I think we are seriously jeopardizing the future security of this nation by allowing this kind of research to diminish to the level that it has been.

A related point and one that I am very concerned about is the issue of nuclear testing. The DOE weapons activity relies essentially on nuclear testing for its support.

[Slide follows:]

A COMPREHENSIVE TEST BAN IS A LONG TERM GOAL. EVEN IF A COMPREHENSIVE TEST BAN WERE VERIFIABLE, WE WILL NEED TO CONDUCT NUCLEAR TESTS FOR AS LONG AS WE RELY ON NUCLEAR WARHEAD TECHNOLOGY FOR DETERRENCE

NUCLEAR TESTING IS INDISPENSABLE FOR:

- ENSURING WARHEAD RELIABILITY
- ENSURING WEAPON SYSTEM SURVIVABILITY
- SYSTEM MODERNIZATION
    - SAFETY, SECURITY, CONTROL
    - MILITARY EFFECTIVENESS
- AVOIDING TECHNOLOGY SURPRISE

YOU SHOULD AVOID THE DOUBLE STANDARD:

- MOST SYSTEMS DEVELOPERS MUST PROVE THEY HAVE TESTED ENOUGH
- IT SEEMS THAT THE NUCLEAR WARHEAD DEVELOPER MUST PROVE HE NEEDS TO TEST AT ALL

SYMBOLIC VALUE ATTRIBUTED TO A COMPREHENSIVE TEST BAN IS OVERRATED AND OUTDATED

THE US AND THE SOVIETS WOULD BE AFFECTED DIFFERENTLY BY A CTB. IT WOULD BE TO THE NET DISADVANTAGE OF THE US, EVEN IF THE SOVIETS COMPLIED FULLY.

NUCLEAR TESTING

I would like to close with these five points about nuclear testing.

A comprehensive test ban is a long-term goal, but even if it were verifiable, I would believe we would need to continue to conduct some level of nuclear testing for as long as we rely on the technology that you are reviewing today for deterrence.

Nuclear testing is indispensable and I mean that word as strongly as I have chosen it there,—indispensible for ensuring warhead reliability, for ensuring that the weapons systems themselves are invulnerable, are survivable. Let me digress on that. We often think of nuclear testing as being dedicated solely to developing warhead designs. In fact, the Department of Defense has its own underground testing program to explore weapons effects. The sources, the explosives, are provided by the Department of Energy. But the Department of Defense carries out those tests and expose a variety of military systems to the radiation and to effects from explosions underground. That activity is essential for ensuring the survivability of MX and the D-5 missile, and a whole host of other military systems.

The ground-launched cruise missile and the Pershing II warhead, which have been so important in holding the NATO alliance together as a viable defense entity could not have been developed without underground testing. Therefore, nuclear testing is critical to system modernization.

Finally, and I believe General Abrahamson will address this point in the SDI content, it is important to avoid being surprised by what the Soviets might do with this kind of technology itself. I think that there is a double standard being applied or perhaps is in danger of being applied.

For most military systems, the developer has to prove that he has tested enough. We are finding for nuclear warhead technology that these people in this room are being asked to prove that they have to test at all. It is patently ridiculous to think that you rely as much as we know you must on testing airplanes, testing radars, testing fighting vehicles, and not believe that you have to test nuclear warheads. It just strikes me as a technologically naive point of view to argue that you can rely on this technology without having to do underground nuclear tests.

One reason I think why people apply that double standard, or tend to want to, is because they see a symbolic value attributed to the CTB. I think that value has always been overrated, is overrated today, and, in fact, is based on thinking that is 35 or 40 years old. That thinking is based on the way people thought about the nuclear arms race in 1945 at the time the first nuclear explosion was fired, or in 1950 when the thermonuclear weapons were being developed. Today, however, this technology is very important for national security, but in fact is one of many important technologies. It contributes in a positive way, not the negative way that was associated with the very early tests, to national security.

It has allowed us, for instance, to reduce the yield in the nuclear stockpile by almost a factor of five over the last 20 years. It has allowed us to provide weapons that are more safe and secure and can be deployed in politically sensitive environments as in Europe, to strengthen our deterrent.

Without nuclear tests, those things simply could not have happened. This feeling that nuclear testing is somehow symbolic of the arms race is greatly overvalued.

Finally, the U.S. and the Soviets, I am convinced, would be affected differently by a CTB. It would be to the net disadvantage of the U.S., even if the Soviets complied fully with the CTB, for both sides to stop testing. That is because I believe the U.S. relies more on the products of this technology than do the Soviets. Therefore, if we were to have to forego those products, it would be to our net disadvantage.

Mr. Chairman, that is all I wanted to say in my opening statement. Thank you.

[The statement of Dr. Wagner is included at the end of the hearing.]

Mr. BEVILL. All right, General Abrahamson, we will be glad to hear from you.

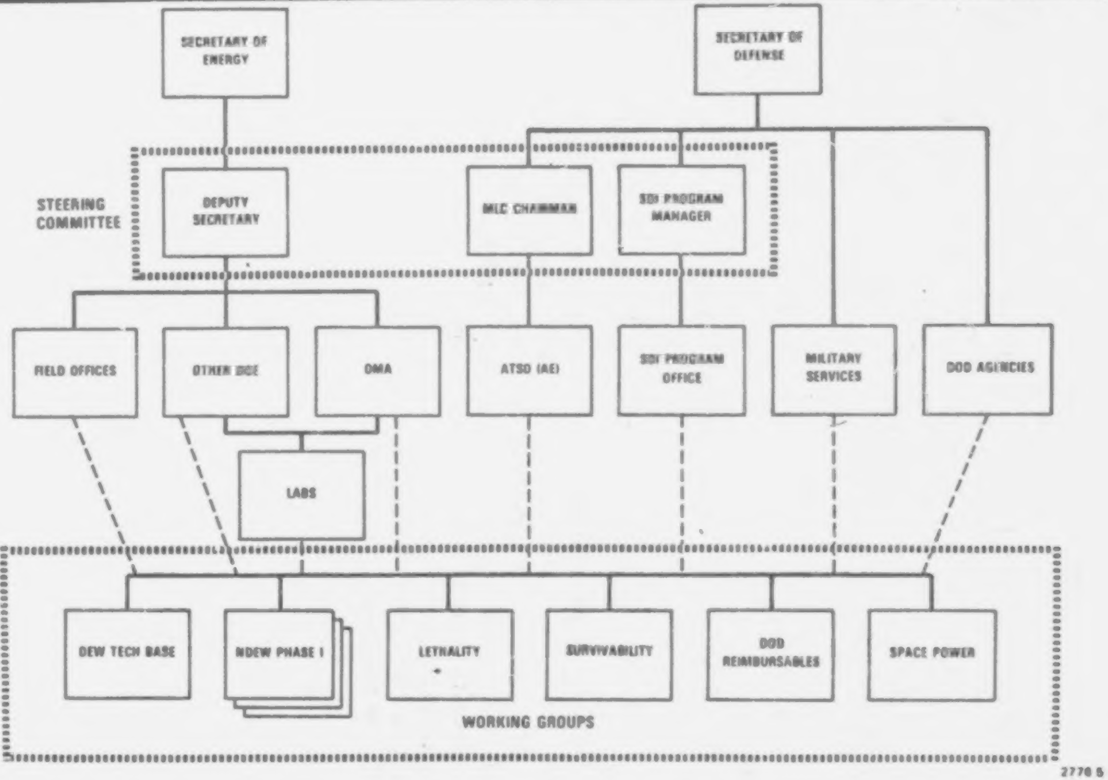
OPENING STATEMENT—LT. GEN. JAMES A. ABRAHAMSON, USAF

General ABRAHAMSON. Mr. Chairman, members of the committee, I am very pleased to be here and to share and discuss the DOE's role in the Strategic Defense Initiative.

I do have a prepared testimony which is intended to be at the unclassified level but, as the other witnesses, I would like to comment briefly and use a classified set of charts to describe the portion of the program that we deal with.

[Slide follows:]

DOE/DOD SDI INTERFACE


SECRETARY OF ENERGY
SECRETARY OF DEFENSE
STEERING COMMITTEE
DEPUTY SECRETARY
MLC CHAIRMAN
SDI PROGRAM MANAGER
FIELD OFFICES
OTHER DOE
OMA
ATSD (AE)
SDI PROGRAM OFFICE
MILITARY SERVICES
DOD AGENCIES
LABS
DEW TECH BASE
NDEW PHASE I
LETHALITY
SURVIVABILITY
DOD REIMBURSABLES
SPACE POWER
WORKING GROUPS
2770 5

First of all, I would like to stress, that the people at all levels in the Department of Energy, starting with Headquarters and down to the laboratories themselves, have already proven that they really do represent some of the most creative and competent scientists in the nation, that they make a contribution that goes well beyond nuclear weapons to many aspects not only for SDI but in many other areas as well.

It has been a great, very gratifying experience for me to deal with these people and to see just what can be done with the foundations and with the practices that you have established here with the wisdom of this committee and certainly with the wisdom of the Department of Energy.

So I value their contribution to this program very, very highly.

I think that is important for you to know from somebody who has been outside of this community in the past.

[Slide follows:]

SDI PROGRAM OBJECTIVES

- CONDUCT A COMPREHENSIVE RESEARCH PROGRAM TO DEVELOP KEY TECHNOLOGIES FOR DEFENSE AGAINST BALLISTIC MISSILES
- PROVIDE THE BASIS FOR AN INFORMED FULL SCALE ENGINEERING DEVELOPMENT DECISION IN THE EARLY 1990s
- SUPPORT AN ARMS CONTROL ENVIRONMENT CONDUCIVE TO SUBSTANTIAL REDUCTIONS IN OFFENSIVE NUCLEAR WEAPONS
- PROTECT A NEAR-TERM DEPLOYMENT OPTION FOR LIMITED ABM CAPABILITY AS A POSSIBLE RESPONSE TO SOVIET ABM BREAKOUT
- EMPHASIZE NON-NUCLEAR KILL MECHANISMS
- COORDINATE SDI WITH OTHER DEFENSE PROGRAMS AND IDENTIFY TECHNOLOGIES WHICH SUPPORT OTHER DEFENSE MISSIONS

24(1)

1010C

STRATEGIC DEFENSE INITIATIVE

Our primary objective in the SDI program, as directed by the President, is, of course, to conduct a comprehensive research program to examine the feasibility of ballistic missile defense. I think it is key that the product of that research program is twofold. One is the decision reached at the end of a sufficient amount of research so that the nation can make a judgment whether we should go ahead with a defensive system; and secondly, to have the technology available so, should that decision be made, it can be made in an expeditious way and people then can go forward in development not only with confidence in the technical feasibility of a strategic defense program, but also confident about the costs and the implications for stability and security. The real objective of this is not to build weapons nor to even militarize space, as many often have talked about. The real objective is to be able to support a different strategy, a different kind of deterrence, one that is less threatening than our present reliance on offensive weapons.

This doesn't mean that what we have today is bad, it is the only thing that has been available to us. But is the future, the question is, how long can that concept really serve this nation and all of our allies given the long-term technology trends and the long-term political trends, and most of all, what the Soviets are doing and have been doing.

Those are the real fundamental issues behind the decision to develop and deploy ballistic missile defenses.

We firmly believe that we do not have to wait until that decision time in order to support and to assist in the arms control process. I think that there is evidence to support that already. In fact, the very existence of the SDI program has certainly gotten the Soviets' attention; they are in Geneva and negotiating seriously.

I am not sure that the program has a clear path yet to successful conclusion in those negotiations. However, just to illustrate how we have tried to support those programs and that effort, Ambassador Kampelman asked me personally to come and present the program to the Soviets, which we did last fall. The intent was to be able to present in an official unclassified way what we are doing and why we are doing it. We believed the United States would be in a position to ask the Soviets to reply with equal candor. They have not yet.

I believe all of us who are interested in supporting and looking to a favorable outcome to that effort are looking for a time when they do respond about their own defensive program and its relationship to their offensive planning. When they do respond with candor, then I believe we will be at a threshold for a real and very lasting positive result in the arms control arena.

Now, meanwhile, the Soviets are moving ahead with a vast upgrading of their existing defensive capability. The intelligence briefings that are available to you make that very, very clear.

We are concerned that one of the most significant means of overturning and exacerbating the present imbalance in our deterrent structure today is for the Soviets to quickly and broadly begin to expand out from under the ABM Treaty. They have the technology base to do that—not in the same kind of dramatic technologies that we are now working on in every case, but they could very quickly change the whole fundamental equation of our present deterrent structure. Should the Soviet Union deploy even a partial defense, even a limited, older technology defense of the broader area of the Soviet Union, particularly including their heavy ballistic missile offensive installations, it would alter the present strategic balance. Therefore, one of our responsibilities is to try to ensure that as we explore defensive technologies that we can use to respond to a Soviet breakout or perhaps more accurately, creepout—which is a very real possibility, one that you cannot clearly pinpoint and identify—of the ABM Treaty.

Obviously, those are not the only means by which the nation might respond. There are many other responses that include a broader array of our offensive and conventional capabilities.

People have often been confused by the fact that the President's clear direction is to emphasize non-nuclear technologies. I think we have been very straightforward in our testimony in Congress, before the DOD committees as well as in discussions that I am aware have occurred in this committee and others, that there is an important nuclear component of our program. I will come back to emphasize that when we are finished.

As we develop the technologies here for SDI, we have a responsibility to identify where those technologies really have relevance to the many Department of Defense security programs. Those are programs in conventional defense and certainly many support programs even for our national civilian space program.

Therefore, it is important that we identify those so that they can be utilized properly and, in that regard, many of these technologies are funded only in the SDI program.

We have taken all the redundancy out, and so where we need a technology, we are carrying that technology in either the DOD program or in some cases in the DOE program for the entire Department of Defense.

Those are the objectives, and I would like to use that as a framework for the program as we go ahead.

[Slide follows:]

NATIONAL LABORATORY FUNDING FOR SDI SUPPORT

	FY 1984	FY 1985	FY 1986
DEPARTMENT OF ENERGY	$118	$215	$270
DOD/SDI REIMBURSIBLE FUNDS	$ 45	$118	$240*

*ESTIMATED

There are two basic programs within the Department of Energy that are conducted by and for SDI. Let me take the bottom one first. Those are the reimbursable programs. You can see the buildup in that effort.

SDI—REIMBURSABLE PROGRAM

Here is where we are making use of funding for non-nuclear activities or for some of the very small amounts of money that are appropriate for Department of Defense examination and funding for nuclear related programs. Those non-nuclear activities include such things as work on the free-electron lasers and other lasers that are being conducted at several of the national laboratories to include lethality and system work being conducted.

Some of our work for neutral particle beam systems is being done there as well as several other advanced systems. I will show you some examples of those.

However, there is a proper allocation under the Atomic Energy Act for funding between the Department of Defense and the Department of Energy, and shown in this chart is the general accounting over the last three years of Department of Energy funding aimed at nuclear research including nuclear testing, which is part of this program.

You can see how that is building up through 1986.

I would now like to shift gears and discuss Soviet countermeasures because it is one of the very important reasons for doing nuclear research.

[Slide follows:]

SOVIET COUNTERMEASURES TO DEFENSE

- SATURATE
- CONFUSE (DECOYS)
- ATTACK DEFENSES

1016C

29(1)

As I stated previously, although our hope will be that we can someday produce a non-nuclear system, nuclear research is a necessary part of the SDI program because the Soviets will undoubtedly use nuclear countermeasures against SDI. However, this is not the only reason, it goes beyond that. Some of the new technologies that are being explored in the Department of Energy nuclear program, if they matured and were workable, could also be used as defensive systems by the Soviets against our offensive forces. I think that is important to remember. [Deleted].

SOVIET COUNTERMEASURES

They would use nuclear techniques as well as other techniques in the future to saturate a defense, confuse it by using decoys and to attack the defenses.

Let me give you two examples of how they might attack the defenses. I have already mentioned the potential of an X-ray laser, the point I would like to make here is, should, the Soviet Union develop this third-generation type of weapon early enough and find it powerful enough, they would logically use it against our offensive forces or the defensive systems.

The second example involves ASATs. There is a lot of discussion of Soviet ASATs and the very small number of what are often described in the newspapers as "a crude Soviet ASAT system." That certainly applies to the Soviet non-nuclear ASATs, the kind that they have tested against low altitude systems for quite a few years and have now improved. [Deleted].

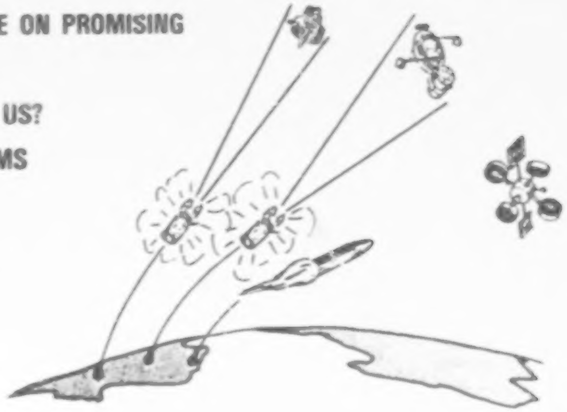
[Slide follows:]

UNCLASSIFIED

POLICY FOR NUCLEAR RESEARCH IN SDI

WEINBERGER—HERRINGTON
FEBRUARY 85

- LONG TERM GOAL: EFFECTIVE NONNUCLEAR DEFENSE
- HOWEVER, RESEARCH WILL CONTINUE ON PROMISING NEW CONCEPTS
  1. WILL THEY USE THEM AGAINST US?
     - OUR SPACE DEFENSE SYSTEMS
     - OUR STRATEGIC FORCES
  2. EXPLORE OPTION FOR SDI USE



HQ 86-U 1033
12 JUNE 86

UNCLASSIFIED

In general, the attack on U.S. defensive systems could be a straightforward nuclear type of attack, or a more advanced attack of the kind that I talked about. It is because of that concern that Secretary Weinberger and Secretary Herrington signed a policy for nuclear research in SDI which was approved. The key elements of that policy are to first of all continue to support the goal of an effective non-nuclear defense, and to also understand the promising new technologies, how they would be used against us both in an SDI system in the future and against our present offensive strategic forces. We need to understand both.

Obviously, in the process of doing that, one begins to understand the advantages and disadvantages of those systems and would compare that to our progress in the non-nuclear areas so that would at least be provided additional options that would be looked at very carefully in a time of national decision. But it is the first one, first bullet one, that is of primary concern to us. [Deleted].

NUCLEAR DIRECTED ENERGY WEAPONS (U)

DELETED

32(1)

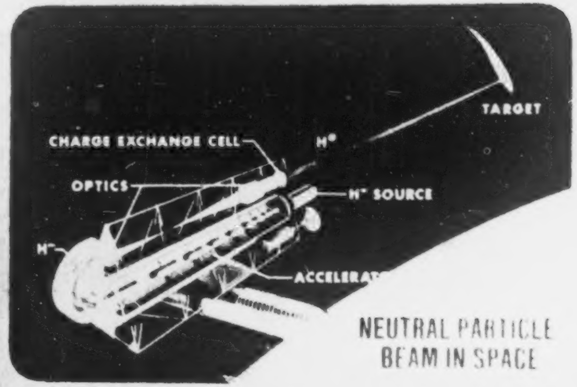
[Deleted]. We are looking for a decision on the overall program out in the 1990 time frame. In order to deal with that program, we must have sufficient background and understanding of both the threat and the potential offensive use of nuclear of systems against us.

[Slides follow:]

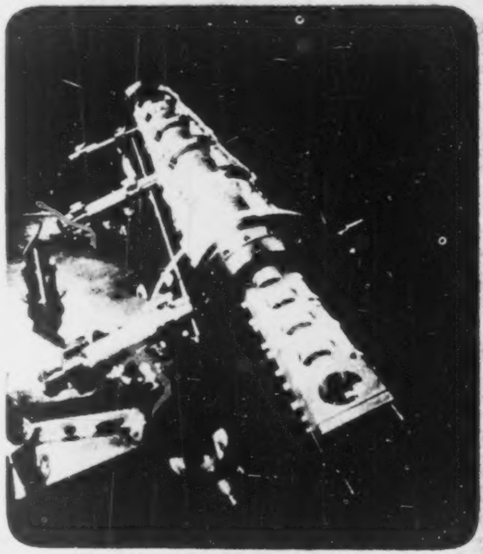
NSP4-242A

5/84

STRATEGIC DEFENSE RESEARCH AT LOS ALAMOS


TARGET
CHARGE EXCHANGE CELL
H^0
OPTICS
H^- SOURCE
H^-
ACCELERAT

NEUTRAL PARTICLE
BEAM IN SPACE

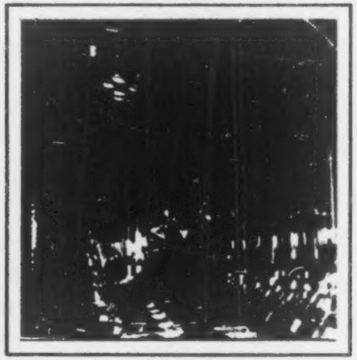


HIGH POWER FREE ELECTRON LASER

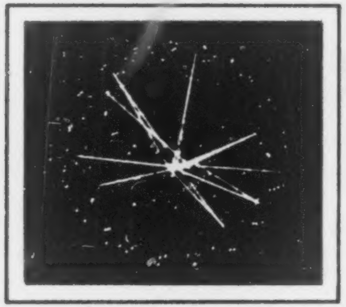
NUCLEAR DIRECTED ENERGY

TECHNOLOGIES RELEVANT TO STRATEGIC DEFENSE

DELETED



Charged Particle Beams



Systems Analysis for SDI

WO-85-708
18 JUNE 85

FREE-ELECTRON LASER

Here are some of the concepts that are being pursued primarily at Livermore, although charged particle beams are also pursued at Sandia and Los Alamos. But the work on the charged particle beam has led to great progress in the free-electron laser (FEL). Remember the FEL is non-nuclear and would be ground-based, so we now consider it to be of sufficient promise that we should give it our highest priority. [Deleted]. Then there is a great deal of system analysis that is available through the computer capability and the very creative people at Livermore which supports us in our overall architectural studies.

At Los Alamos is a high-power version of a free-electron laser that could potentially be used for basing in space. There is the neutral particle beam concept. We also now have a laboratory variety neutral particle beam weapon; it certainly can't go anywhere, it is just sitting in the laboratory there, but it has demonstrated the feasibility of a neutral particle beam as potential weapon. And once again, I would point out that the Soviets are probably well ahead of us in this area.

The reason that weapon works at Los Alamos is because of two Soviet inventions, an ion source and a radio frequency quadropole which are elements of the accelerator. Those were first defined in the Soviet literature as early as 1969. [Deleted]. So we do need to understand that. As I close my summary, I would like to finish by underscoring again the great pleasure and the contribution that the Department of Energy people have made not only with the SDI program, but to the advancement of technology in general.

Thank you.

[The statement of General Abrahamson is included at the end of the hearing.]

Mr. Bevill. All right. The Chair recognizes General Withers.

Opening Statement—Maj. Gen. G.K. Withers, Jr.

General Withers. Thank you, Mr. Chairman.

In accordance with your earlier direction, I am submitting a statement for the record and will now summarize that statement.

[Slide follows:]

DEPARTMENT OF ENERGY DEFENSE PROGRAMS — FY 87 BUDGET REQUEST SUMMARY ($ IN MILLIONS)

PROGRAM COMPONENT	FY 86 B/A	FY 86 ADJ B/A	FY 87 AUTH	FY 87 B/A
TOTAL/WPNS ACTIVITIES	$4333	$4111	$4566	$4664
MATERIALS PRODUCTION	1863	1768	2048	2066
DEF WASTE/BYPROD MGT	656	619	689	704
VERIFICATION & CONTROL	97	94	102	102
NUCLEAR S&S	59	57	66	67
SECURITY INVESTIGATIONS	33	32	33	33
PRIOR YEAR ADJUSTMENTS	—	7	—	—
GRAND TOTAL/DP	$7041	$6688	$7504	$7636

PARM-8:123
3/6/86

This slide was shown to you earlier by Admiral Foley. I show it to indicate that I will be talking about the top line, weapons activities, which includes research, development, and testing, and production and surveillance.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

FY 1987 CONGRESSIONAL SUBMISSION

($ IN MILLIONS)

	FY 1985 ACTUAL	FY 1986 APPROPRIATION	FY 1987 AUTHORIZATION	FY 1987 APPROPRIATION
RESEARCH, DEVELOPMENT, AND TESTING	1,790.0	$1,705.9	$2,035.5	$2,077.4
INERTIAL FUSION	25.1	23.9	23.8	23.8
PRODUCTION AND SURVEILLANCE	2,311.7	2,285.9	2,447.0	2,502.2
PROGRAM DIRECTION	57.5	95.1	60.6	60.6
TOTAL WEAPONS ACTIVITIES	$4,184.3	$4,110.8	$4,566.9	$4,664.0

PARM #:117
3/6/86

37(2)

The next slide provides the FY 1985, FY 1986, and FY 1987 figures for these catagories. I would like to point out that the FY 1986 figures shown in the second column which total $4.1 billion are, after Gramm-Rudman effects, less than the FY 1985 amount. Later, I will explain the inertial fusion figures, which on this slide are only those for our three small supporting laboratories.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

GRAMM-RUDMAN-HOLLINGS
FY 1986 REDUCTIONS

- ABOUT 5%
- PRIMARILY ACROSS-THE-BOARD
- SOME PERTURBATIONS IN NUCLEAR WEAPONS PRODUCTION AND RD&T

PARM:6:020
2/5/86

37(3)

GRAMM-RUDMAN-HOLLINGS REDUCTIONS

I would like to mention the effects of Gramm-Rudman-Hollings on our present fiscal year 1986 program. First, the reductions were about 5 percent. We took them across the board generally, and there are some perturbations on our Weapons Production and our RD&T Program shown in the next slide.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

SUMMARY OF FY 1986 IMPACT ON WEAPONS PROGRAM

($ IN MILLIONS)

REDUCTIONS		IMPACTS
OPERATING RD&T	- $ 79	400-450 FTE's, DISRUPTS TEST SCHEDULES
P&S	- $105	DELETED
IF	- $ 7	FURTHER STRETCH OUT THE INERTIAL FUSION PROGRAM
SUBTOTAL	- $191	
CAPITAL EQUIPMENT	- $ 5	CONTINUED DETERIORATION OF CAPITAL ASSET BASE
CONSTRUCTION	- 21	28 PROJECTS
	- $217	

PARM:6:071
2/5/86

38(1)

In Research, Development, and Testing, the Gramm-Rudman-Hollings cut of $79 million results in a reduction of about 400 to 450 full-time equivalents at our three laboratories and there is some disruption of our underground test schedules. The $105 million reduction in Production and Surveillance [deleted] are several reasons.

First, our 1986 appropriation before Gramm-Rudman was about a $400 million reduction from the President's budget request in Admiral Foley's programs—about $100 million from weapons production. Accommodating this reduction without workload relief reduced most of our flexibility in FY 1986 right at the outset. Adjusting deliveries was the only means to accommodate Gramm-Rudman.

Second, spending reductions in one year's Production and Surveillance funds affects deliveries in the budget year plus two years in the future—due to lead times.

There is a simple formula by which we account for the effect of production lead times called "40, 50, 10;" that is, funds spent in 1987 will be 40 percent for weapons built in 1987, about 50 percent for builds in 1988, and 10 percent for deliveries scheduled in 1989.

Finally, when starting production on a new weapon system, the funds must be spent four or five years in advance of any deliveries on production activities—to get the tooling ready, to buy parts, to certify vendors, and to certify the craftsmen that put the weapons together.

Investing in preproduction activities—taking that much time to do that, we learned a few years ago—is crucially important for achieving producibility objectives. That is, so that these parts, many with very close tolerances, can be produced without a high rejection rate.

So, in summary, most costs for weapon systems are incurred early in the production cycle, and the greatest savings can be achieved by adjusting of systems not yet in full production. This year, when we went through it with our backs to the wall, we were unable to take full advantage of this, and also adjusted many systems in full or late production.

We also took Gramm-Rudman cuts, as you can see there, in inertial fusion, in capital equipment, and in construction.

INVESTMENT STRATEGY

So much for the FY 1986 Gramm-Rudman impacts. Now, the investment strategy for preparing our fiscal year 1987 budget.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

INVESTMENT STRATEGY

- SUPPORT STOCKPILE MEMORANDUM
- SUPPORT PRESIDENT'S SDI PROGRAM
- HALT EROSION OF TECHNOLOGY BASE
- RESTORE, MAINTAIN, AND REVITALIZE FACILITIES
- PROVIDE ADEQUATE SAFEGUARDS AND SECURITY
- COMPLY WITH ES&H LAWS AND REGULATIONS

PARM:6.017
2/5/86

39(7)

As Admiral Foley mentioned earlier, the highest priority is to support the Nuclear Weapons Stockpile memorandum. Our highest research priority is the SDI program. It is very important, we believe, to halt erosion of our technology base. This has already been mentioned earlier.

As Admiral Foley pointed out, our facilities for producing weapons and for conducting research, development, and testing are fragile. It is very important that we put an appropriate level of effort into replacing and maintaining these facilities.

The final two items are deemed very important commitments by our Secretary. He has taken a strong stand to provide adequate safeguards and security for the nuclear weapons complex and to comply with environmental, safety, and health laws.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

WEAPONS SYSTEMS IN PRODUCTION

- B-61-3 BOMB
- B-61-4 BOMB
- W-76 TRIDENT MISSILE WARHEAD
- W-80-0 SEA LAUNCHED CRUISE MISSILE WARHEAD
- W-80-1 AIR LAUNCHED CRUISE MISSILE WARHEAD
- B83 STRATEGIC BOMB
- W84 GROUND LAUNCHED CRUISE MISSILE WARHEAD
- W87 PEACEKEEPER MISSILE WARHEAD

STOCKPILE IMPROVEMENT PROGRAM

- W31 NIKE/HERCULES MISSILE WARHEAD
- B61-1 BOMB CONVERSION TO B61-7

PARM:6:074
[illegible]

WEAPON SAFETY

These are weapons systems which will be supported by the fiscal year 1987 budget. I will not get into the details unless you want to.

Let me point out that our Stockpile Improvement Program, in particular the W31 and the B61, is deemed very important so as to provide modern safety features to these older weapons.

[Clerk's note.—Classified slide removed.]

This is the so-called Mountain Chart. I would like to point out a few things on this.

First, the overall number of weapons built in every year is shown by the height of the top black line. You have what is designated as Stockpile Improvement Program on top of the mountain. [Deleted]. The red line is an indicator of workload requirements. That is man-hours required in the building and assembly of a nuclear weapon. You see that going up. There is a simple explanation for that. Nuclear weapons today are considerably more complex and sophisticated than they were a few years ago, owing to the necessity of putting in modern use control and safety features.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

STRATEGIC DEFENSE INITIATIVE FUNDING

($ IN MILLIONS)

	APPROPRIATION	
	1986	1987
STRATEGIC DEFENSE INITIATIVE		
OPERATING EXPENSE	$268	$465
CAPITAL EQUIPMENT	—	56
STRATEGIC DEFENSE FACILITY	2	15
TOTAL	$270	$536

PARM:6:087
2/10/86

STRATEGIC DEFENSE INITIATIVE

Strategic Defense Initiative funding is approximately doubling in our FY 1987 budget. These increases are needed to provide the people, materials, diagnostics, computer equipment, and underground tests to continue on that very important program, which I will explain in the next slide. General Abrahamson has already mentioned some of these.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

DOE SDI PRIORITIES
BROAD RESEARCH PROGRAM

NUCLEAR DIRECTED ENERGY WEAPONS

1. X-RAY LASER, HYPERVELOCITY PELLETS
2. MICROWAVES
3. OPTICAL LASERS, PARTICLE BEAMS

VULNERABILITY, LETHALITY, COUNTERMEASURES

SYSTEMS ANALYSIS

PARM:6:101
2/19/86

In the DOE, we are doing work in the nuclear-directed energy weapons, shown in the first three lines. We are also doing vulnerability, lethality, countermeasures work, and systems analysis.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

NUCLEAR SDI POLICY STATEMENT

3 REASONS FOR NDEW RESEARCH:

- SOVIET COUNTER DEFENSIVE CAPABILITY
- SOVIET CAPABILITY AGAINST OUR RETALIATORY DETERRENT
- SDI OPTION IF NEEDED

PARM:6:102
2/19/86

The explanation of why we are doing nuclear-directed energy work has already been made by General Abrahamson. I will merely point out that the statements here are taken from a joint Secretary of Defense/Secretary of Energy policy statement indicating that: First, we need to understand the Soviet capability against any defensive systems which we are able to develop.

Second, we need to understand what Soviet capability there might be against our present deterrent forces.

Finally, we must have a nuclear SDI option if such is needed.

[CLERK'S NOTE.—Classified slide removed.]

The next slide is similar to the one General Abrahamson has already shown you, an indication of our intent to provide General Abrahamson by the early 1990s the information he needs to then determine what to do with the overall SDI program. In other words, by the early 1990s, we want to know what the Soviets are capable of doing and what we are capable of doing in nuclear-directed energy weapons.

[Slide follows:]

FY 1986 APPROPRIATION TRANSFER

- SDIO SOURCE
- DOE NDEW
- $62 MILLION

PARM:6:122
3/6/86

A couple of weeks ago, I believe, the President sent to Congress an appropriation transfer recommendation. A part of that is to transfer $62 million of FY 1986 funds from the Department of Defense to the Department of Energy so that we can improve our chances and decrease our risk of doing this very important nuclear-directed energy weapon research.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

OPERATING FUNDING FOR INERTIAL FUSION ACTIVITIES

($ IN MILLIONS)

	FY 1986	FY 1987
RESEARCH, DEVELOPMENT, AND TESTING		
LOS ALAMOS NATIONAL LABORATORY	$ 29.5	$ 21.5
LAWRENCE LIVERMORE NATIONAL LABORATORY	62.8	36.0
SANDIA NATIONAL LABORATORIES	21.9	29.0
OTHERS	1.2	0
SUBTOTAL RD&T	115.4	86.5
INERTIAL FUSION		
KMS FUSION	13.1	12.0
UNIVERSITY OF ROCHESTER	7.0	8.0
NAVAL RESEARCH LABORATORY	2.5	2.5
SUBTOTAL IF	22.6	22.5
TOTAL	$138.0	$109.0

PARM:6:106
2/19/86

43(1)

INERTIAL FUSION

Turning now to inertial fusion, I mentioned earlier on the display of our fiscal year 1987 figures that they represented work done only at our three supporting laboratories. Those are the ones shown near the bottom of the slide—KMS Fusion, University of Rochester, and Naval Research Laboratory.

The rest of the Inertial Fusion program is being folded into our overall weapons research, development, and testing program. We are doing that for what we consider very important reasons. We believe that the contributions of inertial fusion to weapons work will be appropriately prioritized which is especially important in our present deficit reduction environment.

There will be reductions in the overall inertial fusion program, but these reductions are relatively slight.

Also, some things which in the past were funded by the inertial fusion program are being funded in FY 1987 by the primary sponsor or program to which the work is most closely related.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

INERTIAL FUSION ACTIVITIES

LOS ALAMOS NATIONAL LABORATORY
- CONTINUE CENTURION EXPERIMENTS—KRF DRIVER TECHNOLOGY

LAWRENCE LIVERMORE NATIONAL LABORATORY
- REDUCED NOVA EXPERIMENT—COMPLETE HALITE EXPERIMENT

SANDIA NATIONAL LABORATORIES
- PULSE POWER TECHNOLOGY—COMPLETE PBFA II EVALUATION

KMS FUSION
- PELLET FABRICATION—LASER COUPLING

UNIVERSITY OF ROCHESTER
- OMEGA EXPERIMENTS—UNIFORM ILLUMINATION/ DIRECT DRIVE

NAVAL RESEARCH LABORATORY
- UNIFORM ILLUMINATION—STABILITY

PARM 8-107
2/15/86

As indicated on my next slide, at Los Alamos, we will continue [deleted] Centurion and continue Krypton-fluoride driver technology.

At Livermore, we will continue the operation of NOVA at about the same level it is being operated this year. [Deleted].

At Sandia National Laboratories, we will continue work in the very important PBFA II reactor techology, the particle beam fusion accelerator, which holds the promise of a relatively inexpensive driver in inertial fusion. We deem it very important to continue that work.

The work at three supporting laboratories is shown there and that will continue.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

FY 1987 NEW CONSTRUCTION PROJECTS

($ IN MILLIONS)

PRODUCTION	TEC	FY 1987 AUTHORIZATION	FY 1987 APPROPRIATION
87-D-122 SHORT RANGE ATTACK MISSILE II WARHEAD PRODUCTION FACILITIES, VL	$ 55.0	$ 5.0	$ 5.0
87-D-123 PROTECTIVE CLOTHING DECONTAMINATION FACILITY, ROCKY FLATS	5.2	0.5	0.5
SAFEGUARDS AND SECURITY			
87-D-104 SAFEGUARDS AND SECURITY ENHANCEMENT, PHASE II, LLNL	67.4	4.3	4.3
87-D-130 RECEIVING AND SHIPPING FACILITY, PINELLAS	2.7	0.3	0.3
ENVIRONMENTAL, SAFETY, AND HEALTH			
87-D-102 ENVIRONMENTAL COMPLIANCE AND CLEANUP, LLNL	134.0	7.0	7.0
87-D-127 ENVIRONMENTAL, SAFETY AND HEALTH UPGRADE, MOUND	4.3	2.4	2.4
TOTAL		$ 19.5	$ 19.5

PARM:6:118
3/6/86

44(1)

NEW CONSTRUCTION

The next slide shows our new construction projects, new starts proposed for FY 1987. The two projects at the top are programmatic new starts in that they support things we need. First the short-range attack missile II warhead production facilities at various locations; secondly, an important clothing decontamination facility for our plutonium assembly facility at Rocky Flats.

The next two new starts are important safeguards and security enhancements at Livermore and at Pinellas in Florida.

Finally, we are requesting two important environmental, safety, and health projects—at Livermore and one at our Mound plant in Ohio.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

RESTORE AND MAINTAIN

($ IN MILLIONS)

	FY 1986	FY 1987	
	APPROPRIATION	AUTHORIZATION	APPROPRIATION
GENERAL PLANT PROJECTS	$ 56.2	$ 61.0	$ 61.0
BASIC CAPITAL EQUIPMENT	209.4	218.4	218.4
FACILITIES AND EQUIPMENT RESTORATION	152.2	97.9	116.9
TOTAL	$417.8	$377.3	$396.3

PARM:6:119
2/19/86

This is an indication of efforts to restore and maintain our capital asset base. Several times, we have indicated the fragility of our facilities and the need for these funds. We would have liked to put more money here but, considering the overall constraints, we think this is an appropriately prioritized program.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

RD&T FACILITIES REVITALIZATION

($ IN MILLIONS)

FY 1986 APPROPRIATION	FY 1987 AUTHORIZATION	FY 1987 APPROPRIATION
$ 47.9	$ 43.3	$ 72.9

PARM:6:120
2/19/86

RD&T FACILITIES REVITALIZATION

The next slide shows the revitalization work which is the replacement and improvement of our research, development, and testing facilities. The reason for the difference in figures in FY 1987 is that we already have authorization for the amount of money for which we are requesting appropriation. There are no new starts in that area.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

NUCLEAR TESTING IS NECESSARY FOR CREDIBLE DETERRENT

- TO MONITOR THE CURRENT STOCKPILE
- TO EXPLORE NEW WEAPON CONCEPTS
- TO DEVELOP, WEAPONIZE, AND CERTIFY NUCLEAR WEAPONS FOR NEW WEAPON SYSTEM APPLICATION
- TO UNDERSTAND THE FUNCTIONING OF NUCLEAR EXPLOSIVES
- TO INVESTIGATE THE EFFECTS OF NUCLEAR EXPLOSIONS ON MILITARY SYSTEMS

PARM:6:083
2/10/86

UNDERGROUND TESTING

This will give you an indication of the importance that we attach to nuclear testing. Let me say that as long as we must depend on nuclear weapons for our national security, we must have testing so that we know we can rely on those weapons.

[Slide follows:]

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

FY 1987 BUDGET REQUEST RECAP

- COMPLY WITH NWSM
- SUPPORT SDI MILESTONES
- INTEGRATE INERTIAL FUSION INTO TECHNOLOGY BASE
- ORDERLY CONTINUATION OF RESTORATION AND REVITALIZATION
- CONTINUE SAFEGUARDS & SECURITY UPGRADE
- MEET ES&H STATUTORY REQUIREMENTS

PARM-8:034
2/6/86

45(4)

SUMMARY

Sir, my final slide is to recapitulate our fiscal year 1987 budget request and to say that it does comply with the Nuclear Weapons Stockpile Memorandum. It will support the SDI milestones, integrate inertial fusion into our overall research, development, and testing program; continue the restoration and revitalization programs at an orderly level; and provide for the essential safeguards and security and environment, safety, and health work.

That, sir, concludes my testimony.

[The statement of General Withers is included at the end of the hearing.]

Mr. BEVILL. Mr. Badolato, we would be glad to hear from you.

OPENING STATEMENT—EDWARD V. BADOLATO

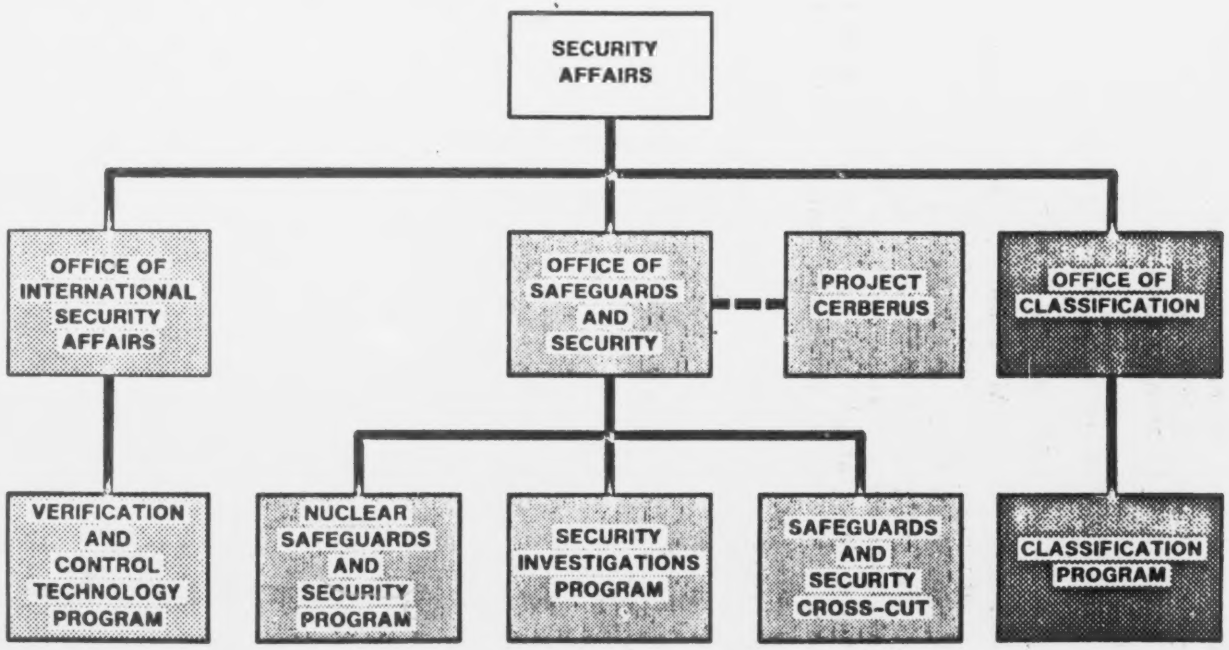
Mr. BADOLATO. Yes, sir, Mr. Chairman. It is a pleasure to be here today to brief you on the Security Affairs programs.

Within the area of Security Affairs, I would like to brief you first on some of the background of our programs, cover the highlights of our request, and then discuss some of the initiatives.

I think it is important, before I begin, sir, to talk in terms of the three offices and the four programs that this budget request supports.

[Slide follows:]

SECURITY AFFAIRS PROGRAMS



SECURITY AFFAIRS

OFFICE OF INTERNATIONAL SECURITY AFFAIRS

OFFICE OF SAFEGUARDS AND SECURITY

PROJECT CERBERUS

OFFICE OF CLASSIFICATION

VERIFICATION AND CONTROL TECHNOLOGY PROGRAM

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM

SECURITY INVESTIGATIONS PROGRAM

SAFEGUARDS AND SECURITY CROSS-CUT

CLASSIFICATION PROGRAM

DP40830T.10

In the yellow area we have the offices. This is the Office of International Security Affairs, which has the Verification and Control Technology program to support.

In the central area, the area of safeguards and security, we will discuss the budget program for Nuclear Safeguards and Security, our Security Investigations program, as well as a separate budget estimate for the overall safeguards and security cross-cut for the Department.

In the area you see in red, we have our Office of Classification which is a relatively small program which is folded into our Nuclear Safeguards and Security program.

At the top in green you see an area called Project Cerberus. That is a large project and new initiative we have which I will discuss in a little bit of detail

OPERATION CERBERUS

As far as background on Project Cerberus, about a year ago Secretary Herrington, coming on board to the Department, was very concerned about the status of safeguards and security. In examining the Department, he felt he needed a team of outside experts to come onboard and give him an assessment of exactly what the status of safeguards and security was at that time.

[Slide follows:]

"... ANY ADVERSARY WHO ATTEMPTS TO GAIN CONTROL OVER OR STEAL A NUCLEAR WEAPON, A CRITICAL WEAPON COMPONENT, OR SPECIAL NUCLEAR MATERIAL WOULD FACE A HIGH PROBABILITY OF FAILURE."

REPORT OF THE SPECIAL PROJECT TEAM
AUGUST 30, 1985

He called in outside experts. They traveled to every one of the major facilities over a period of several months, put together a report, the bottom line of which essentially was that any adversary who attemps to attack or steal some of our equipment, some of our special nuclear material, some of our weapons, would have some very tough hurdles to overcome.

In saying that, our overall assessment of our security was satisfactory; however, the team also said that there was some very strong management actions which had to be taken to support the overall management and effectiveness of how the Department does its safeguards and security business.

The Secretary took that information and directed that an implementation plan be put together to cover the nearly 100 recommendations that this special team made.

Thus, Operation Cerberus, a program to increase the effectiveness and efficiency of safeguards and security in the Department, was formed.

[Slide follows:]

DEPARTMENT OF ENERGY

OPERATION CERBERUS

"INCREASE THE EFFECTIVENESS AND EFFICIENCY OF SAFEGUARDS AND SECURITY AT DEPARTMENT OF ENERGY FACILITIES."

- CONTINUED MANAGEMENT IMPROVEMENTS
- CORPORATE PLANNING AND PROGRAMS
- INTERGOVERNMENTAL COOPERATION

[illegible]

HQSS 02 053

49(1)

Cerberus, as most people can remember, is the mythological three-headed dog that guarded the gates of Hades, and as such, was an appropriate symbol to name for an operation of this type.

It had three main objectives. The first one was to accelerate and continue the ongoing improvements in safeguards and security. The second one was to instill a sense of corporate management and planning. And the third was to improve the way we do business within the intergovernmental arena.

[Slides follow:]

SECURITY AFFAIRS

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM

SECURITY INVESTIGATIONS PROGRAM

VERIFICATION AND CONTROL TECHNOLOGY PROGRAM

CROSSCUT ESTIMATES

DP40SSOT.12D

HQSS 18 022

1986

SECURITY AFFAIRS (Millions)

	FY 1986 APPROPRIATIONS	ADJUSTED FY 1986 APPROPRIATIONS	FY 1987 APPROPRIATIONS
NUCLEAR SAFEGUARDS & SECURITY	$ 58.9	$ 57.1	$ 66.9
SECURITY INVESTIGATIONS	33.4	32.2	33.3
VERIFICATION & CONTROL TECHNOLOGY	97.3	94.3	101.7
TOTALS	$189.6	$183.6	$201.9

DP40633T.05A

49(3)

NUCLEAR SAFEGUARDS AND SECURITY

I am going to talk about the four major programs today. I will begin with the Nuclear Safeguards and Security program; as you see on the top line, it has a request of $66.9 million. Also included on this slide are the previous year's requests and current requests for Security Investigations, Verification and Control Technology items, which comes to a total of $201.9 million requested for fiscal year 1987.

[Slide follows:]

SECURITY AFFAIRS

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM

SECURITY INVESTIGATIONS PROGRAM

VERIFICATION AND CONTROL TECHNOLOGY PROGRAM

CROSSCUT ESTIMATES

The Nuclear Safeguards and Security Program of $66.9 million essentially involves us in some areas as is depicted here. [Chart.]

NUCLEAR SAFEGUARDS AND SECURITY

FY 1987

$66.9 APPRO
(In Millions)

CENTRAL TRAINING ACADEMY

TECHNICAL ASSISTANCE

IDENTIFY VULNERABILITIES

MATERIAL CONTROL AND ACCOUNTING

OVERSIGHT NEW BRUNSWICK LABORATORY

RESEARCH AND DEVELOPMENT

NUCLEAR TECHNOLOGY LABORATORY, LOS ALAMOS

DP409307.13

We have a central training academy to provide continuing technical assistance to the field and identify vulnerabilities; also, we are responsible for material control and accounting, oversight of the New Brunswick Laboratory, our R&D programs, and a Nuclear Safeguards Technology Laboratory in Los Alamos.

I would like to point out here that this particular request is in a transition year. As we move toward completion of our construction programs to defend against the outside attack of adversaries, if you will, we are now shifting emphasis toward the insider. I would like to discuss briefly our insider program which we have a process and program working toward at this time.

[Slide follows:]

DEPARTMENT OF ENERGY INSIDER PROGRAM ELEMENTS

- PERSONNEL CLEARANCE
- HUMAN RELIABILITY
- PHYSICAL PROTECTION
- INFORMATION CONTROL
- OPSEC
- REGIONAL THREAT ASSESSMENT
- SECURITY AWARENESS AND EDUCATION
- INTELLIGENCE COMMUNITY LIAISON
- FOREIGN TRAVEL/VISITS AND ASSIGNMENTS
- NUCLEAR MATERIAL CONTROL

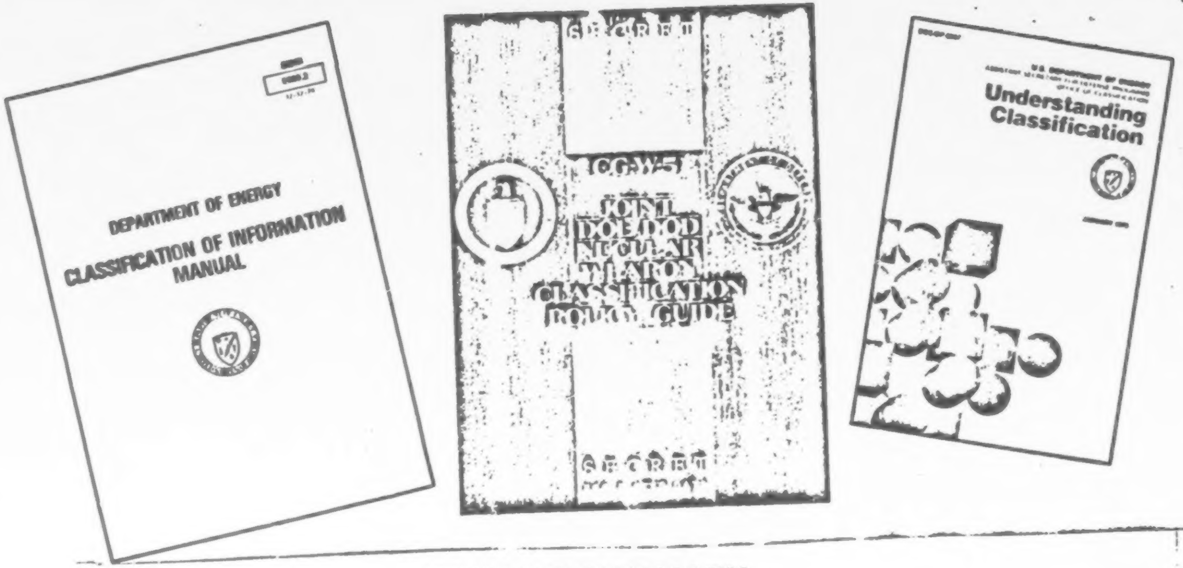
DP409307.01A

50(1)

As you know, the insider has come to light in the news over the last few months. We are worried and are continuing to work on our personnel clearance program, our human reliability, and the way we do our essential inside physical protection as well as many other ways of controlling information. We are also working on foreign visitors and intelligence aspects of our operation.

[Slide follows:]

OFFICE OF CLASSIFICATION


DEPARTMENT OF ENERGY
CLASSIFICATION OF INFORMATION MANUAL
SECRET
CG-W-5
JOINT DOE/DOD NUCLEAR WEAPON CLASSIFICATION POLICY GUIDE
SECRET
Understanding Classification

FUNDING SUMMARY
(DOLLARS IN MILLIONS)

FY 1986 APPROPRIATION	ADJUSTED FY 1986 APPROPRIATION	FY 1987 APPROPRIATION
$3.8	$3.7	$4.3

OFFICE OF CLASSIFICATION

The Office of Classification, which is a relatively small portion of our budget, involves only $4.3 million. It is folded into our Nuclear Safeguards and Security program. It is particularly small, but important at this time in that we have many new technologies particularly in the SDI program, which this office is very interested in, and is in the forefront of assuring that those technologies are properly classified and protected.

[Slide follows:]

SECURITY AFFAIRS

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM

SECURITY INVESTIGATIONS PROGRAM

VERIFICATION AND CONTROL TECHNOLOGY PROGRAM

CROSSCUT ESTIMATES

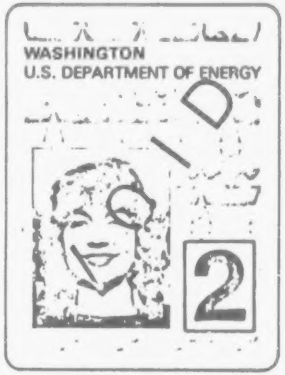
SECURITY INVESTIGATIONS

The next major area is our Security Investigations program.
[Slide follows:]

DEFENSE PROGRAMS — SECURITY AFFAIRS

SECURITY INVESTIGATIONS

NATIONAL AGENCY CHECKS
FY 1987 10,600


WASHINGTON
U.S. DEPARTMENT OF ENERGY
2

FULL FIELD BACKGROUND
FY 1987 20,164

FUNDING SUMMARY
(DOLLARS IN MILLIONS)

FY 1986 APPROPRIATION	ADJUSTED FY 1986 APPROPRIATION	FY 1987 APPROPRIATION
$33.4	$32.2	$33.3

This is an area of personnel clearances. In it, we are requesting $33.3 million for FY 1987. This is for about a total of 30,000 clearances of which 20,000 are in the longer term, more extensive background investigations and 10,000 are for our National Agency checks.

We are looking very hard at this program. We have a goal to reverse those numbers to ensure that the cheaper, shorter types of clearances such as National Agency checks would be the ones we would have in the 20,000 number. The more expensive, longer term background investigations would be the smaller number. We are optimistic that we will be able to make progress.

We have just started studying this and working toward this goal along with other areas of government to look at the way we do our security clearance programs. We feel that we will be able to work toward our goal.

[Slide follows:]

SECURITY AFFAIRS

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM

SECURITY INVESTIGATIONS PROGRAM

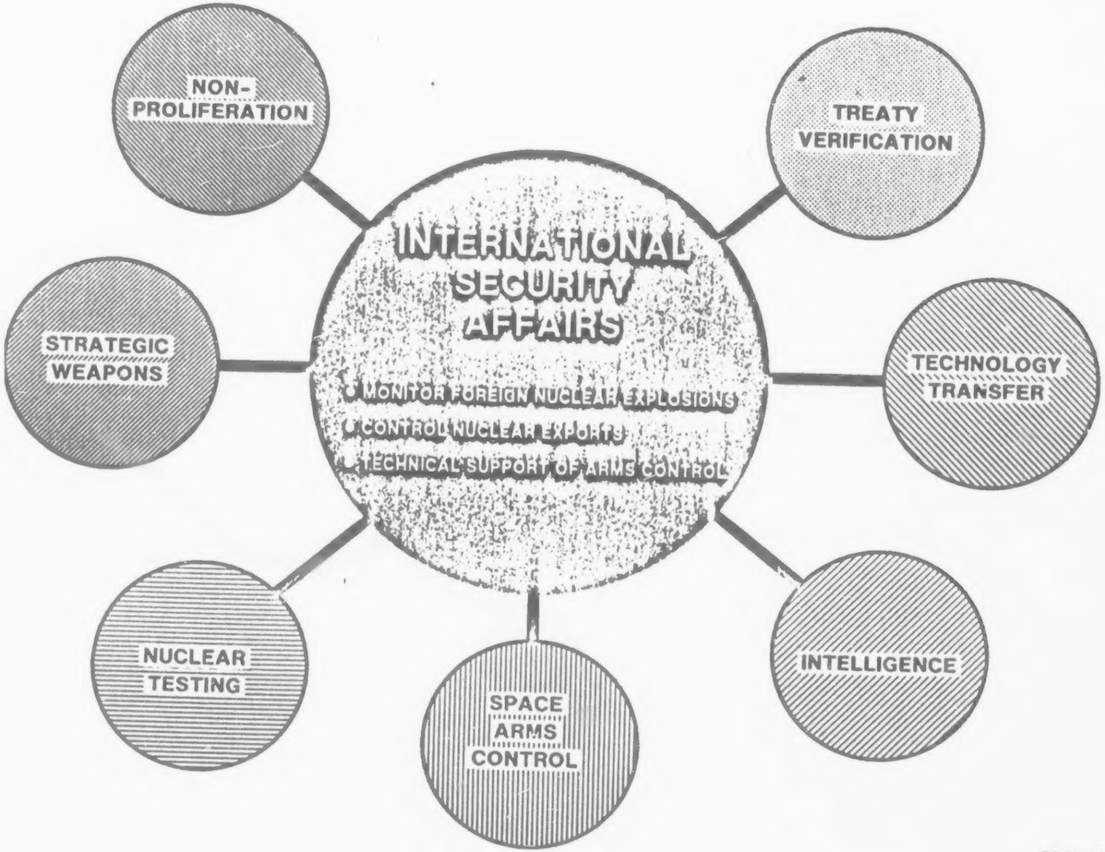
VERIFICATION AND CONTROL TECHNOLOGY PROGRAM

CROSSCUT ESTIMATES

1986

VERIFICATION AND CONTROL TECHNOLOGY

The next area is our Verification and Control Technology.
[Slide follows:]



INTERNATIONAL SECURITY AFFAIRS

- MONITOR FOREIGN NUCLEAR EXPLOSIONS
- CONTROL NUCLEAR EXPORTS
- TECHNICAL SUPPORT OF ARMS CONTROL

NON-PROLIFERATION

TREATY VERIFICATION

STRATEGIC WEAPONS

TECHNOLOGY TRANSFER

NUCLEAR TESTING

SPACE ARMS CONTROL

INTELLIGENCE

DP409307.04

51(4)

This slide shows what our Office of International Security Affairs does: it monitors foreign nuclear explosions, takes care of transfers of nuclear exports, as well as technical support of arms control negotiations and activities.

The balloons shown around it are many of the areas in our arms control process in which our Office of International Security Affairs plays a major role in technology and advice.

[Slide follows:]

SECURITY AFFAIRS

VERIFICATION AND CONTROL TECHNOLOGY

(IN MILLIONS)	FY 1986 APPROPRIATION	ADJUSTED FY 1986 APPROPRIATION	FY 1987 APPROPRIATION
DETECTION TECHNOLOGY			
ANALYTICAL SUPPORT			
ISA PROGRAM DIRECTION		DELETED	
INTELLIGENCE			
TOTALS			

*Reflects $3.0M reduction under Gramm-Rudman-Hollings.

BP405301.01

52(1)

In this budget request, we have requested a total of $101.7 million. The bulk of that goes for detection technologies.

I would like to point out that the [deleted] for FY 1987 in the intelligence area is managed by our Intelligence Office within the Department.

We have here today in the audience Mr. Charles Boykin, our Deputy Assistant Secretary for Intelligence. He is the senior officer responsible for intelligence within the Department. I manage the Verification and Technology Control program, but he is the responsible officer for the intelligence portion.

[Slide follows:]

SECURITY AFFAIRS

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM

SECURITY INVESTIGATIONS PROGRAM

VERIFICATION AND CONTROL TECHNOLOGY PROGRAM

CROSSCUT ESTIMATES

SAFEGUARDS AND SECURITY CROSS-CUT ESTIMATES

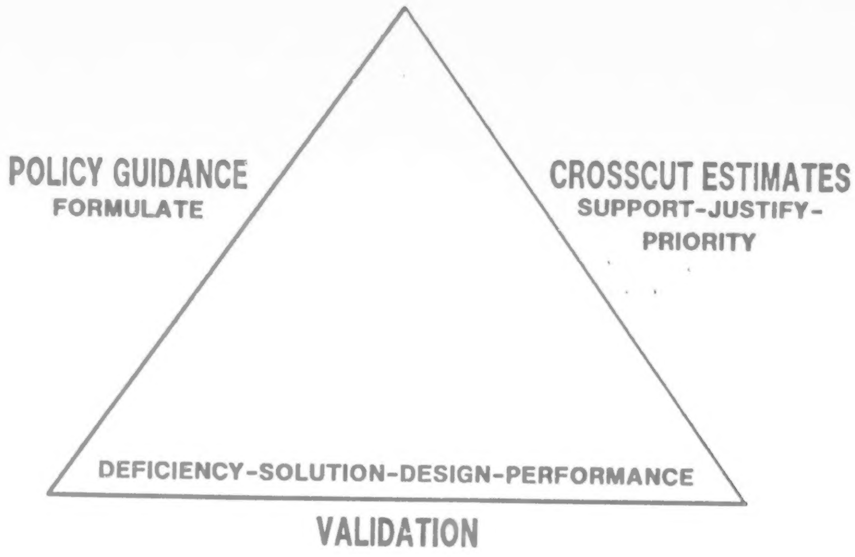
Now I would like to talk about the final area, the cross-cut estimate.

[Slide follows:]

52(3)

DEFENSE PROGRAMS - SECURITY AFFAIRS

NUCLEAR SAFEGUARDS AND SECURITY FOCAL POINT


POLICY GUIDANCE
FORMULATE
CROSSCUT ESTIMATES
SUPPORT-JUSTIFY-PRIORITY
DEFICIENCY-SOLUTION-DESIGN-PERFORMANCE
VALIDATION

FY 1987

APPROPRIATION
$789 MILLION

DP40930T.09

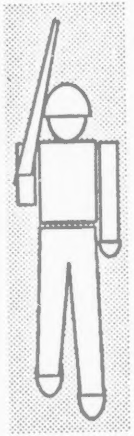
We have throughout the Department $789 million requested for fiscal year 1987 in safeguards and security. This total figure is important to us in Security Affairs simply because we are responsible for not only policy guidance and how we validate, justify and prioritize these projects, but we are also responsible as the focal point to assure that we can support and justify this cross-cut estimate.

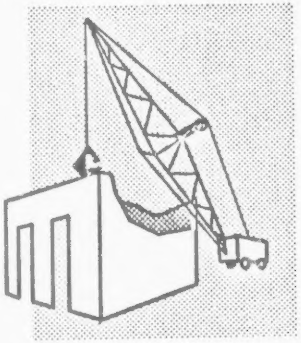
[Slide follows:]

SECURITY AFFAIRS

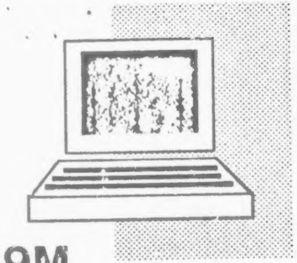
SAFEGUARDS AND SECURITY CROSSCUT

OPERATING
EXPENSES
$ 605M





CONSTRUCTION
$ 135M



CAPITAL
EQUIPMENT
$ 49M

TOTAL $ 789M
FY 1987 APPROPRIATION

DP40833T.01

Shown here is a breakdown of the major parts of it. The major part in operating expenses, which is the guns, gates, and guards on a daily basis. The construction at $135 million. Capital equipment at $49 million.

[Slide follows:]

SECURITY AFFAIRS

SAFEGUARDS AND SECURITY CROSSCUT (Millions)

	FY 1986 APPROPRIATION	ADJUSTED FY 1986 APPROPRIATION	FY 1987 APPROPRIATION
OPERATING EXPENSES	568	564	605
CAPITAL EQUIPMENT	36	36	49
CONSTRUCTION	125	120	135
TOTAL	729	720	789
DEFENSE ACTIVITIES	(638)	(629)	(691)
NON-DEFENSE	(91)	(91)	(98)

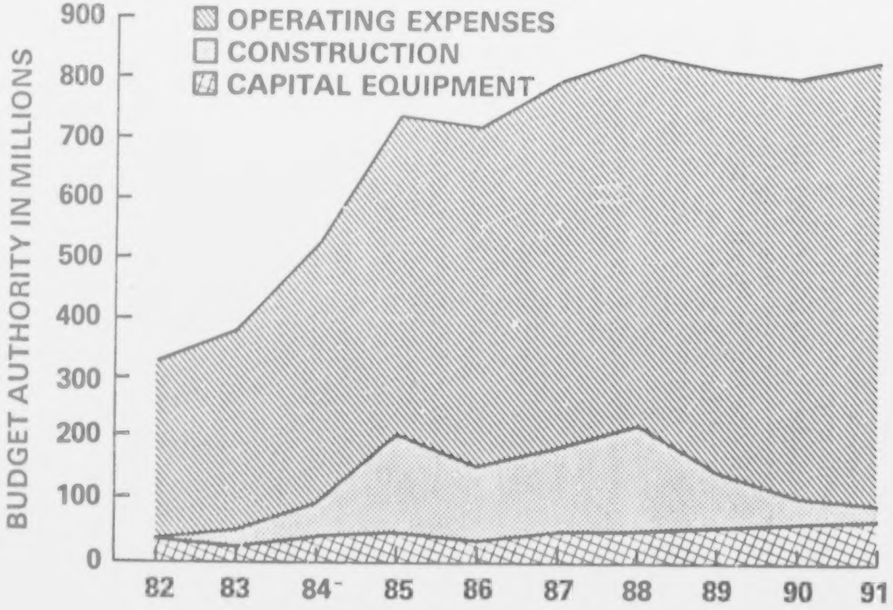
SP40833T.01A

This is a yearly breakdown showing that the $789 million is actually composed of $691 million for defense programs. $98 million of this cross-cut is used for non-defense related safeguards and security.

[Slide follows:]

DEPARTMENT OF ENERGY

DOE-WIDE SAFEGUARDS AND SECURITY



HQSS 04 031

53(3)

I would like to at this time put up this chart to show you the trend that we have in safeguards and security.

It is obvious that if we look at the way this has increased over the last few years, the major area that we have to be concerned about is in our operating expenses. We have, as I say, right now gotten the construction program under control, but with the increase in guards, the increase in training, and the increase in the types of training and equipment which we give these individuals, we are having large budget expenditures in operating expenses.

This is one of the reasons why the Secretary as well as Admiral Foley is so interested in the management activities in order to gain a better idea of how we are spending our money and make more efficient use of it.

[Slide follows:]

DEPARTMENT OF ENERGY

OPERATION CERBERUS

"INCREASE THE EFFECTIVENESS AND EFFICIENCY OF SAFEGUARDS AND SECURITY AT DEPARTMENT OF ENERGY FACILITIES."

- CONTINUED MANAGEMENT IMPROVEMENTS
- CORPORATE PLANNING AND PROGRAMS
- INTERGOVERNMENTAL COOPERATION

DP40830T.08

HQSS 02 053

54(1)

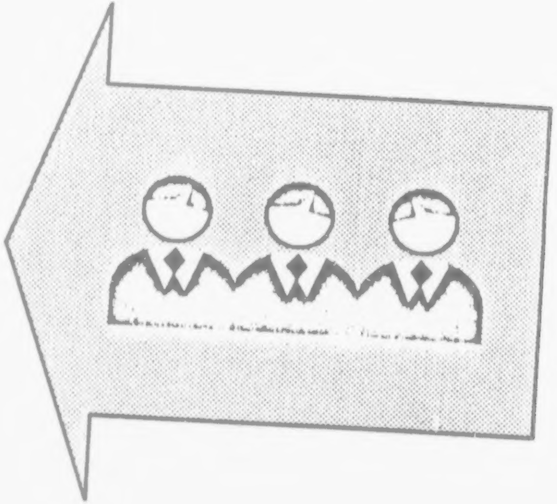
OPERATION CERBERUS

We talked about Operation Cerberus in the beginning in continuing management improvements and corporate management. I would like to discuss with you this innovative program.

Within Operation Cerberus, we have formed within the Department a number of boundary crossing, very innovative task forces to examine various parts of the safeguards and security program.

[Slide follows:]

SECURITY AFFAIRS -
OPERATION CERBERUS COMMITTEES



PEOPLE
LEGAL ISSUES
THREAT INFORMATION SYSTEM
CORPORATE PLANNING
PHYSICAL SECURITY
MATERIALS CONTROL & ACCOUNTING
RESEARCH & DEVELOPMENT
TRAINING
RESOURCE MANAGEMENT
INTERAGENCY INITIATIVES
INTERNATIONAL SAFEGUARDS

DP40833T.04

As you see, we are looking at the people problem, the numbers of guards we have, how they are trained, the legal issues involved, the corporate planning, physical security that we have, the materials control, and research and development. We are looking at every area to ensure that we have efficiency as well as effectiveness and to see where cost savings and good management can take place.

I think it is important to point out that though we are asking for a significant amount of money, the new team coming onboard has the top level commitment to ensure that we are using that money very effectively.

We have a good corporate management approach that we are instilling at this time. We have a systemswide and indeed a governmentwide application of good solid safeguards and security principles to assure that this program is successful and cost effective.

Thank you, Mr. Chairman.

Mr. BEVILL. Thank you very much.

[The statement of Mr. Badolato is included at the end of the hearing.]

RELATIONSHIP WITH CIA

Mr. BEVILL. Mr. Badolato, do you have a good, close working relationship with the CIA and your Office of International Security Affairs?

Mr. BADOLATO. Sir, I think the answer there would have to be yes. We have a good, close working relationship within the various intergovernmental groups that we join to work with in this town.

However, I would like to say that Mr. Boykin, who is responsible for intelligence, was a former Agency officer. He has, I would characterize it, an excellent to outstanding working relationship, and we work very closely with him as he does with us, with the Agency, sir.

RELATIONSHIP WITH FBI

Mr. BEVILL. On your domestic work, do you also have a close relationship with the FBI?

Mr. BADOLATO. Yes, sir, we have a solid daily working relationship with the FBI.

Mr. BEVILL. In your security clearances, do you use the FBI for that purpose or do you use your own agents?

Mr. BADOLATO. No, we do not use any of our own assets for that. The majority, about 93 percent of our long background investigations, are done by OPM. About 7 percent are done by the FBI when we need a higher level of background investigation.

LIE DETECTORS

Mr. BEVILL. Do you use the lie detector tests?

Mr. BADOLATO. We do not use them as a general rule. Only in some very, very rare and special circumstances will we use the lie detector test for background investigations.

CERBERUS

However, under Cerberus, sir, we are examining lie detector testing to see whether there would in fact be benefits there. But we have not made that decision at this time.

Mr. **Bevill**. Secretary Foley, the Administration has submitted a fiscal year 1986 supplemental request of $62 million for DOE strategic defense program.

Mr. **Foley**. Yes, sir.

Mr. **Bevill**. The funds for this supplemental are to come from DoD appropriations.

Mr. **Foley**. Yes, sir.

Mr. **Bevill**. Please explain why this transfer is used rather than a request for a new appropriation.

Mr. **Foley**. Funds are being transferred to us from the DoD under an appropriation transfer which clearly falls within the proper fiscal methodologies.

In this particular case, the $62 million is to meet milestones of General Abrahamson's SDI program. We said, quite candidly, we support the SDI mission and we would like to contribute more, but we don't have the money. In order to accelerate the milestones, we need the $62 million from DoD.

Our fiscal people got together and made the determination that an appropriation transfer was in fact the best and proper way to move the money on across.

General, do you want to amplify in any way?

General **Abrahamson**. I think the key point, sir, is that this transfer is within the intent of Congress and the appropriations and authorization oversight of the various committees. This is the formal way to allow this committee as well as the Department of Defense oversight committees to examine and allocate their portion of the budget.

So it was in the interest of, obviously, doing this properly.

Mr. **Bevill**. All right.

Mr. **Foley**. For example, sir, there was a lot of advice to us that said just send the money on a reinbursable work order, but we said, "You are going to get burned badly because that is the responsibility of Congress to act on this. You can't do that."

So we will be very up front. We will go ahead and put it right out in front as an appropriation transfer and support it, and see how it works out. That is where we are right now.

NUCLEAR TESTING

Mr. **Bevill**. Dr. Wagner, you said that it is to the disadvantage of the U.S. even if the Soviets complied fully with the comprehensive ban on nuclear tests. Would you comment on that?

Dr. **Wagner**. Yes, sir. I believe that to be true for the following reason: [Deleted]. A great many things we know about their systems and about the way they implement warhead technology in their systems would lead us to believe that we rely a lot more on the features in nuclear warhead design for our national deterrence purposes then they rely on features in warhead designs.

Three or four particular reasons stem from more fundamental asymmetries; one of them is that they simply have a lot more throw weight in their missiles and that we do not confront them, in their targeting of their missiles, on targets in the United States and our assets around the world, with targets which are as hard, as difficult to destroy as they confront us.

So they can throw more yield, in effect with their missiles and they don't need to throw as much.

This means that they don't demand of their warheads as much sophistication in producing yield in a small package as we do.

In the area of safety, I am sure that they, as do we, have pressures to prevent in an accident a mushroom cloud, the nuclear explosion. But we have gone far beyond that.

During the last decade, we have begun to populate our weapons stockpile with weapons that incorporate insensitive high explosive so that in an accident, the high explosive in a weapon will not accidentally explode and spread radioactive material around the countryside. [Deleted.] We go to increasingly great lengths, not in an accident situation but the day-to-day exposure of our troops, to reduce the little bit of radiation that comes out of warheads; that is we go to greater lengths to minimize what we call the intrinsic radiation so that a sailor sleeping in a compartment next to where the warhead is stored on a submarine will not be exposed to even very low levels of radiation. That requires nuclear testing to build that feature into the warheads. [Deleted.]

In terms of security, we build security features right into our warheads because we deploy them in a society where people are allowed to go where they want to go. They can get close to the places where we store nuclear warheads.

In the Soviet Union and in the Eastern bloc countries where they have warheads deployed, they have control of the population. They do not need to build those kinds of features into the guts of their warheads, and, therefore, they don't need to test to develop them.

I could go on and on but I think there are a lot of fundamental asymmetries in the way we approach our societal and defense problems that say we rely more on those features. If you rely on the features, you have to test in order to develop them.

TEST BAN TREATY

Mr. BEVILL. If we had a test ban treaty, and everybody agreed, no more testing, you say we would still be at a disadvantage?

Dr. WAGNER. Yes, sir, I believe so, because we will need to continue to rely on the features in the warheads, the reliability of the warheads. I think because demands have been less stressful for the Soviet warheads designer, and therefore his warhead is probably less likely to be subject to the kinds of deterioration that we know ours see because ours are very tightly optimized, they have had to be tightly optimized. Therefore, the Soviet designer would be less likely to need to understand what is happening to his warheads by testing than we would be during the period of not testing.

Mr. BEVILL. The Chair recognizes Mr. Myers.

Mr. MYERS. Thank you, Mr. Chairman.

Gentlemen, good afternoon. I believe it is the first appearance for three of you. Dr. Wagner and General Withers are old pros here, We welcome you three new-comers to our committee.

Admiral Foley, I am pleased to see you are out and about. I understand you were under the weather last week.

Mr. FOLEY. Severe flu, yes, sir.

Mr. MYERS. Your testimony today dwelt heavily and I think appropriately so that we must be extremely cautious in tampering with the request that you have given us. The cuts that we made and the committee made last year were absorbed not without cost, but if I may use the analogy, the straw that broke the camel's back was Gramm-Rudman. You are not the only budget that has been impacted rather severely by Gramm-Rudman.

This committee certainly has supported your program, but we also are deeply concerned about balancing our budget and complying with Gramm-Rudman.

FUNDING TRADEOFFS

I think most of us didn't vote for it even though we support balancing the budget. It is going to be difficult for us to go to the floor of the House and convince our colleagues, as well as the American people, that SDI is building more nuclear weapons and is more important than some other programs. It is going to be politically very difficult for us to do this year.

What is the tradeoff and have we considered the possibilities? If we reduce your request is the tradeoff the fact we will just push off to future years construction of the weapons that we need and the research for SDI into some future year?

We have done this in the past. We increase the total costs. Besides costing more money are there other dangers we should consider.

Mr. FOLEY. Fundamentally, sir, you are dealing in risk. When you cut back on the budget, you increase the risk.

You have to examine very, very carefully how much risk are you willing to accept for the nation in terms of your strategic defense, and the risk to the entire production complex which produces nuclear weapons that provide the national deterrence.

The military commanders come up with their requirements. These requirements are massaged and analyzed and the President decides, with the Secretary of Defense and Secretary of Energy concurring. We present to the President the stockpile memorandum which he signs and says, "This is what I need to assure adequate deterrence for the United States vis-a-vis our enemies, particularly the Soviet Union."

What you are talking about doing is increasing the risk to the American people. I regard that as the very fundamental issue that we are talking about.

When you take money away, in my judgment, you are increasing the risk. I have already told you I am particularly uneasy in a couple areas.

I come from a strong military background with years of time in the military service. I must tell you that in light of my responsibility for ships and now nuclear weapons and the oversight and possible use of them, I didn't like what I saw, when I went through the nuclear production complex. I really didn't. I am very uneasy about the condition of our production facilities. More money must go into restoring these facilities.

There may have been a day when we could come around once a year and ask you for money and you gave it to us. Today, we have to very carefully justify every buck we spend. Based on what my people tell me, we have scrubbed this request with the laboratories and program managers more carefully and in greater detail this year than we ever have in the past. It is a lean budget.

Gramm-Rudman will force us to lay off about 1,000 people throughout the nuclear complex. Fundamentally, however, what you are talking about is increasing the risk. I am unwilling to accept any further risk without it being directed, because I don't think our budget should be reduced any further down from where we are right now. Even at this level, I am uneasy.

Mr. **Myers** Well, I must say that I share your concern. I guess I am playing the devil's advocate here.

Mr. **Foley**. Yes, sir.

Mr. **Myers**. It is difficult to tell a farmer who is having trouble finding financing to plant this year's crop or the people trying to put their kids through school, or the people looking for more dollars for medical research that the President's nuclear stockpile memorandum is more important than these issues are to them. They usually say, "What nuclear stockpile memorandum? That is not important to us."

Then they read a statistic where the world now has 20 times more nuclear weapons than we need. We could kill everybody on earth 20 times with the stockpile we presently have. How do you respond?

RESPONSES TO WEAPONS FUNDING CRITICISMS

Dr. **Wagner**. Two or three responses I would put out. One is the purpose of the weapons is not to kill people; it is to deter war, keep people from being killed.

If you ask how many are required to do that, we don't determine the numbers based on fatalities. We believe that what will deter the Soviets most effectively in a crisis situation, where to them all alternatives appear black, is to threaten destruction of their military forces, and that is where we start, with the number of targets that one has to be able to threaten in terms of their military forces to show to them that they could not achieve an objective of use of those forces. That is one line that I would take.

The other line I would take is to say that we are not building more and more nuclear weapons, with the ups and downs of production. We retire an old one every time we build a new one.

So what the money is really being spent for, as I answered Chairman Bevill's question earlier, is the technology is the warheads. What you are buying is, and I will say it first, although it will sound like I am gold-watching you, what you are buying first is safety. And let me elaborate on that because Admiral Foley mentioned risks.

To the DOD and the DOE, and you heard Admiral Foley in his introductory statement make the point, safety is something you don't compromise. Whenever you put people in a situation where they have a set of objectives that they have to meet, and they don't have enough money to meet those objectives, you are running a risk of safety.

The warheads we are building to put into the stockpile today replace old ones which, in many cases, are 20 or 30 years old and simply did not have the safety features in them that the new warheads have. We are being asked to keep weapons out in the field for a decade or two longer than they were intended when they were first produced. I think you will run a safety risk.

We may be, in fact, further along toward a safety risk than we know today because our accident record is so good there is no way of finding out how close to the edge we are.

So I think there is a serious problem in that dimension of risk.

One might actually put warheads into the stockpile that might not work, despite the fact that they had been tested in nuclear tests during development, because of changes during the production process resulting from the fragility of the manufacturing facilities.

You might say that if they are intended to deter war, then it doesn't matter if they don't work. But if it were ever found out that they didn't work, they would not be an effective deterrent. I think that would be a terribly dangerous situation to be in.

Mr. **Myers**. I think the people appreciate the fact that we don't have more weapons than we had in 1960—we have less. We are getting more bang for the buck. But they ask, if we retire a weapon, why replace it?

STRATEGIC DEFENSE INITIATIVE

As for SDI, I am surprised SDI is as well accepted by the American people as it is. I have spoken to a number of high school and college groups as well as adult groups around the country, and I have never spoken to a group where the overwhelming majority didn't support SDI. They want this type of security.

They have many questions about it. All of us do. But you said in your testimony that the Soviets were actually in SDI before us. Just where are they today? I never could quite understand why the Soviets so strongly object to SDI when it is a defensive measure.

Star Wars is a bad name to give it. But the media, and I have a daughter in the media, uses Star Wars rather than SDI because it sounds more like Buck Rogers and maybe sells more in print.

I don't think we are doing a good job of explaining that we are talking about a non-nuclear initiative.

What will your response be if someone said, "Yes, but we will clutter up the atmosphere with nuclear waste"? How would you explain that?

General **Abrahamson**. First of all, I think that what you have outlined is exactly what all of us need and want. We hope that we can find a way out of the dilemma we are dealing with in the present time. Even the critics of the program, and there are quite a few in the scientific community and other places as well, do not have an answer for some of the long-term trends and what they mean. I can come back to that if you would like.

But when you ask them, what is your alternative, they don't have a very good one.

So we are searching for a means to have what I have often called and feel is a strategy of hope.

The question critics ask is whether this will stop nuclear explosions and so on? The first and most fundamental requirement of the SDI system of the future is that it should be a defensive deterrent. It should be a means of stabilizing the world even in a crisis condition. Again, to prevent that crisis from going further to the point where somebody does attack and start what could be an absolutely uncontrollable course of events. At the very least, the kind of situation that might develop would be unpredictable.

NUCLEAR DETERRENCE

So the first requirement is to have deterrence. In order to have a defensive kind of deterrence as opposed to an offensive kind of deterrence, it must have the real promise of being effective, not only in terms of stopping missiles as we know them today, but also stopping what the other side might do in order to try to penetrate.

Frankly, there would be nothing more dangerous than for us to move forward with false confidence or for the Soviets, even if we had a very effective system, to make an error in judgment thinking that they had found a solution to penetrating such a system. They would have a false confidence about their offensive capability.

That one reason alone is a reason to explore what we think they might do with a nuclear kind of deterrent or a nuclear kind of countermeasure, so that they know that we know we have the answers.

I wish I could offer you a solution to the terrible dilemma you all face this year. It is a very difficult one. I think we all appreciate that. All we can do is to try to explain as best we can that we are aiming to use the money prudently, and that it is a minimum kind of requirement that we come and can justify that use and obviously the responsibility of making an overall national resource decision and then trying to explain that. That is difficult.

Mr. MYERS. Much of the opposition seems to be cost related.

General ABRAHAMSON. Yes, sir.

Mr. MYERS. I wish we didn't have to spend any money on defense.

Recently there has been at least one report from a usually responsible columnist, that you have overstated the testing results in SDI to win approval. Can you respond to that?

General ABRAHAMSON. Sure. Usually when they talk about that, they refer to two or three visible tests. We are trying to run the program as openly as possible. What I mean by that is open within the limits of security, because again, we think that the best way to assure that it meets its objectives is, first of all, for the other side to understand what we are doing and the potential of it; and for the American people to understand it as well. Therefore, the basic policy in which we are going ahead is an open program.

LASER TESTS

I think the specific allegation has been made against such things as the laser tests that we have done down in White Sands where we have a laser which is our only U.S. [deleted] laser that has been allocated to this kind of purpose.

The Soviets have [deleted]. Of course, we have just really seriously begun these tests at White Sands.

They say the fact that we use the laser and we blew up a missile there with it in a short period of time and shared that with the television audiences is an overstatement in trying to get support.

Actually, the program is one of our more systematic attempts to understand laser damage phenomenology and how the laser destroys systems. It is based on, and I can give you this kind of an explanation in each of our areas, a series of sample tests going on around the country with small lasers because they are more cost effective. We need to understand how lasers burn through or rip away material of different kinds.

Test results are then incorporated into a mathematical model. By the way, these mathematical models are the key to SDI. Our huge advances in computers and modeling are the primary reason why the SDI is possible now and was not judged to be in the past.

So, that mathematical model converts what happens when a laser strikes an object like a booster into the program. We do a minimum number of these kinds of tests, but they are necessary so we know that our model is accurate.

In fact, that is precisely what we did and we did only two of these particular tests. There will be more in the spring. But it is a combination of a very systematic kind of approach. The people who initially reported that we were overstating our tests just didn't understand or didn't appreciate the full depth of the capability and what is behind that program. Similar things go on in each of our cases.

I find in general that those critical reports, if you read them carefully, start from a basic political bias against the program, and I understand that. But we do our very best to answer those critics and to maintain a communication even with the critics so that we see where their criticism in valid. We do our best to try to convince them and show them that we are conducting a responsible program.

STRATEGIC DEFENSE INITIATIVE

Mr. **Myers**. Thank you. I have a number of questions for the record and one last question here.

In one of your Vugraphs, you spoke about the different systems under consideration, which are directed energy, laser, particle beams, microwave, and hypervelocity pellets.

Are you likely to decide upon one system or would you deploy more than one system depending on the need?

General **Abrahamson**. The fundamental philosophy in the program, sir, is that we would never do any one function with only one method. The reason is because we want to ensure that there isn't some real weakness or something that the Soviets could exploit and find a way around. They have clever people on the other side. No question about it.

Mr. **Myers**. So you would probably have more than one system.

General **Abrahamson**. Therefore, you would use different approaches. You wouldn't use dozens, but we are carrying parallel approaches partly along the program.

I made some very hard choices in the last year already. I think that is important to know. Last year, on the Department of Defense side, the budget was reduced by 25 percent, a billion dollars was taken out. That is more than any other program in the Department of Defense except those programs that were clearly terminated for some cause.

Previously, the plan had been to take forward a large number of different technologies and then to examine those at a key point in the future when you see that they pay off and judge the best one. I couldn't do that responsibly with the kind of cut; since the Congress had to make choices and the Department had to make choices, I thought it was my responsibility to all of you to make choices. And I did.

Therefore, we have kept only the most promising technologies in what I call an after-burner, fast.

Mr. **Myers**. Will you choose one when you finally make the decision or will you have more than one?

General **Abrahamson**. No, sir. We will have more than one fundamentally different choice.

Mr. **Myers**. That you will hope to deploy.

General **Abrahamson**. Yes.

Mr. **Myers**. Thank you.

I apologize for the time, Mr. Chairman.

Mr. **Bevill**. The Chair recognizes Mrs. Boggs.

Mrs. **Boggs**. Thank you, Mr. Chairman.

Gentlemen, thank you very much for the work that you do and for your testimony today.

TEST BAN TREATY

Secretary Foley, you argue that a comprehensive test ban agreement is not in the best interests of our defense. Dr. Wagner seems to agree wholeheartedly with that conclusion.

How much testing is required of our weapons systems in order to determine if they are effective? Could you foresee us ever reaching a point where you feel confident enough in the integrity of our arsenal that you would support such a test ban agreement?

Mr. **Foley**. Not at this time, Mrs. Boggs. I would have to stick to the statement that as long as we have nuclear weapons, I support the need for nuclear testing.

We do about [deleted] tests a year right now. Some are fundamentally technology base oriented, some are for Strategic Defense Initiative research, and some are for stockpile confidence testing. The level [deleted] in that ball park, seems to me about the right number now. I don't see a need to increase that.

For example, some would say, could you get away with cutting tests in half? If you told me I had to live with half, the answer is, yes, I could live with that, because that is all I could do. But the question is, in my judgment, should we continue to do testing as long as we have nuclear weapons? In my judgment, the answer to that is yes.

Mrs. **Boggs**. Even since President Dwight Eisenhower, every American President has felt it was in the best interests of all of us to pursue this type of agreement, and it has really been our American policy all these years.

Do you think we should veer from the policy?

Mr. **Foley**. No, Ma'am, not one bit. I think that what we should be striving toward is the eventual elimination of nuclear weapons. I think from all Presidents, and the Joint Chiefs of Staff, to all us who have been in the military or in a civilian role, all of us share that same objective, final elimination of nuclear weapons.

But at the same time, we do have those who say: "Should we be striving toward a verifiable agreement?" The answer is yes, in my judgment.

I think that the recent initiative of the President proposing to the Soviet Union that we use the CORRTEX technology, for example, as the fundamental basis for verification is a step forward I support that entirely. I think we should strive toward that. Yes, Ma'am.

Mrs. **Boggs**. Thank you.

TEST BAN TREATY

Dr. Wagner, do you really feel that a resolution calling on President Reagan to resume negotiations on the comprehensive test ban treaty poses a threat to the readiness and reliability of our nuclear arsenal?

Dr. **Wagner**. I think if we were to cease testing at this time or in the next few years as a result of such negotiations, it would pose a threat not only to our arsenal but to what the aresenal is for, which is to guarantee our security.

I believe, as Admiral Foley has said, that research on verifying one of the test ban treaties that we already have, the threshold test ban treaty, is a very appropriate thing to do.

I think that H.J. Res. 3 and bills that might be similar to it do in fact pose some danger, because it is politically a delicately balanced issue, and so I would be opposed to such measures.

Mrs. **Boggs**. General Abrahamson, it is very nice to see you again.

General **Abrahamson**. Thank you, Ma'am.

Mrs. **Boggs**. [Deleted.] Could you point out the efforts that your research includes to protect against the effects of EMP on the U.S. communications systems and weapons?

General **Abrahamson**. Our research does not include protective means for the U.S. system as a whole yet. What we are trying to do is to understand the potential of high power microwaves to generate a devastating kind of overall attack that might affect many of our weapons systems.

We are now investing in and doing research on elements for an SDI system which would be radiation-hard. That technology could be applied on a broader basis for many of our security systems and be helpful. But presently, I am not investing in, for example, funding for our overall U.S. communications system of today.

Dr. **Wagner**. But the DOD is spending a lot of money——

General **Abrahamson**. There are others doing a it.

Dr. **Wagner**. To both explore the technology and for specific systems to harden against EMP.

It is a difficult job partly because it is very hard to test especially communications systems to such a widespread effect. But we are doing the best we can.

General **Abrahamson**. A specific example of some of those relationships is the F-16 program. The F-16, of course, had to be reliable in a nuclear environment. Therefore, we took the F-16 out to Albuquerque on some of our special facilities there and we tested it for EMP, with the help of a computer that was built today with the same kinds of technology for today.

In the SDI program, we are examining and developing different circuits which are much more radiation hardened. Again, that can be applied not only for SDI but if combined with computer systems for airplanes or other weapons in the future, it would serve to assist them in that process.

COMPUTER SECURITY

Mrs. **Boggs**. Mr. Badolato, I was very pleased to see that the safeguards and security area of your work is getting a great deal of attention and that you are striving for efficiency as well as effectiveness of the Cerberus committee.

Can you tell me how the Department is dealing with the insider threat problem? What steps have you taken to protect your computer system from sophisticated eavesdropping or from computer hackers?

Mr. **Badolato**. In the area of insiders, the computer systems that we have is one area where we have to pay a lot of attention, obviously, Ma'am.

Within the Department, if we consider OSD separate from the Services, we have the most sophisticated, largest number of computers in this country. We have a large obligation here.

We are looking very hard at the way in which all of our very, very technical support for and use of computers, and in our weapons program especially, such as in our laboratories at Los Alamos and at Lawrence Livermore and Sandia, can safeguard themselves against an insider.

We have taken a number of actions to ensure that we have not only those physical type of electronic means to ensure that they cannot get inside, but some other plain, common sense measures as more training, and philosophical work to assure we don't have a guy out there who can dial an 800-number and get into our computers. We have done a lot in this area. One of the major things that we have done is that we have just instituted recently within our Office of Safeguards and Security a separate and distinct computer security office. It is just another type of security office.

We have such a large computer budget within the entire DOE complex that computer security deserves its own organization element. We have brought in some of the very best people that we can find.

The second thing that we have done is we have a DOE center for computer security out at Los Alamos. It has been going along for a couple years. We have taken a hard look at redirecting and refocusing how this can better support our insider needs for security.

And again, with those two areas, I think the third and most important thing that we are doing right now against the insider and overall threat is that we completely restructured the way in which we inspect our own computer systems. As you heard Admiral Foley mention earlier, the way we have gone into an inspection and evaluation system is that we are rewriting computer security policy, and putting out a better inspection system to assure that this policy is implemented. We have a long way to go. We may take a couple years, but I assure you, within the systems now, we are not leaving ourselves open but we are taking a hard look and making strong actions to ensure that we are doing everything possible to work toward a very, very secure computer system.

Mrs. BOGGS. Thank you.

Mr. FOLEY. Let me add one point, if I may. The independent inspection and evaluation team under my management examines computer security. We go in with outside experts and test and pulse every installation in our system for their computer security. It is a pass-no-pass evaluation. If you fail, you close down. We stop computing activity until there is adequate security.

We have found at least recently that our computer security is very, very good and it isn't just our own people; the computer academy out there in Los Alamos was brought in and verified this. These are people with the best minds in the nation working on computer business. We use their capabilities. So I think that that is one way to handle this.

The other is we are going into the safeguards and security with a systems engineering approach. We have band-aided a lot of things over the years by putting barbed wire up here and something else there, but now we go in with the modular system approach and apply it across all field establishments.

Every system is different. Maybe you only need closed-circuit television at yours, but maybe at the next one they need a major overhaul of the system. By coming in with the systems engineering approach, we have coherency and standards acknowledged throughout the system.

I just think we are getting a much better handle on it that way.

AVLIS PROGRAM

Mrs. BOGGS. It is encouraging to hear that. From someone with six grandsons, I know how easy it is to get into these things.

Since the AVLIS program involves sensitive technology, what complications does the administration's proposal to privatize the security process?

Mr. FOLEY. That is a good question.

Mr. BADOLATO. Privatize. I didn't mean to downplay it, but we have a small budget for the office which examines this, the Office of Classification. We do not only work on transfers of the AVLIS.

You might understand that the potential for AVLIS later on, Ma'am, is going to be something which we want to be very careful that its military and potential defense implications are not going to come back and bite us a few years downstream if we privatize this.

So we do have a committee at this time which is studying this. We are putting out the guidelines on this as part of the function of the Office of Classification, and we will ensure that those parts of AVLIS which have implications for us later on will not be misused and will be safeguarded.

VERIFICATION TECHNOLOGY

Mrs. BOGGS. How much confidence do you have in our verification technology capability?

Mr. BADOLATO. Well, that is a real interesting question from a technology standpoint. Please don't think I was being immodest, but I would like to say that within the DOE and our entire laboratory complex, especially with Livermore Los Alamos, and Sandia, we probably have the finest seismologists from the aspect of verification technology that there are in the world.

When we meet sometimes I kid them that seismology is a lot like astrology, but it is more, better than that.

I think this recent initiative that the President announced last Friday pointed to the CORRTEX, which, if we are going to have confidence in being able to verify positively, it is in this CORRTEX process. CORRTEX does not rely on a regional system which is hundreds of miles away that could be spoofed or fooled into thinking an underground explosion is an earthquake or something of that nature, [deleted].

CORRTEX is something which has been developed at our Los Alamos lab by DOE-sponsored activities. I think that is the hope for being able to positively have confidence in verification. [Deleted]. We will complement that with seismology where we can calibrate a certain test site and determine what the bias is, and we can determine the structure of the ground and layers of the rocks and the geophysical strata. [Deleted].

However, though we should look forward to some confidence in an integrated system, the heart of the system which can give us the confidence that nobody is cheating in nuclear testing. One of the very important parts—a very important facet we want to get to—would be a system of one-site inspection and use of the CORRTEX [deleted].

Mrs. BOGGS. Do you believe that sharing our verification technology with the Soviets should give them the same level of confidence?

Mr BADOLATO. I would believe that that should. However, if we know the Soviets and their concerns, we have made that offer before, and it certainly hasn't moved them.

DETECTION OF SUBMARINES

Mrs. BOGGS. Dr. Wagner, how safe from detection are our ballistic-missile-carrying submarines?

Dr. WAGNER. Mrs. Boggs, I believe they are quite safe from detection today. There is research going on, on the part of the Soviet

Union as on our part—to understand the technologies for finding submarines.

I think they are safe today, however, and will continue to be for many years.

MIDGETMAN MISSILE WARHEAD

Mrs. **Boggs.** Is this effort to develop a warhead for the Midgetman missile comparable to efforts to develop warheads for the Trident II and the Peacekeeper missiles, MX missiles?

Dr. **Wagner.** The development of the warhead for the so-called Midgetman, the small ICBM will be the same in its general features; the same kinds of things will be looked at: what the yield is, what the safety has to be, and so forth.

We have explored to some extent, for those options of the small ICBM that might be mobile, somewhat more elaborate safety and security features than we currently believe are necessary for the ones in silos or submarines. But no decision has been made yet either on the system characteristics or the warhead for it.

HAZARDOUS WASTE

Mrs. **Boggs.** General Withers, I was very pleased to see that we now have an Assistant Secretary for Environment, Health, and Safety, and your report on accidents and safety of the workers is certainly an encouraging report.

Could you provide us some specifics about your work in the hazardous waste disposal sites and in the transport of hazardous materials?

It is a subject, of course, that concerns the Congress very definitely.

General **Withers.** It is of great concern to us and we are doing a great deal of work in that area. I think, however, in dealing with the subject of hazardous waste transport tomorrow's witness, Mr. Meinhardt, will be much better prepared to go into the details.

Mrs. **Boggs.** Perhaps I should save this for him, but I was wondering if we would have technology transfer to the local and state and regional governments and to the private sector as well.

General **Withers.** It is, of course, something we do to the extent we can within the realms of having to protect national security information. But in every area where that is possible, where we are not giving up our defense security information, we do that.

Mrs. **Boggs.** Thank you. Thank you so much.

Thank you, Mr. Chairman.

Mr. **Bevill.** The Chair recognizes Mr. Rudd.

Mr. **Rudd.** Thank you, Mr. Chairman.

Thank you for providing us the inspiration to do the things necessary for the security of our nation.

Dr. Wagner, I am sorry to hear that you are leaving. I hope that you will continue to be working for our country.

Dr. **Wagner.** I certainly will.

Mr. **Rudd.** There is no such thing as retirement.

WARHEAD SAFETY FEATURES

We go to much greater extremes than the Soviets do to protect safety. Do we have any reason to believe that they have had a number of accidents because they are not as thorough as we are?

Dr. **Wagner**. We do know that some years ago they had one or more very large accidents that contaminated a very large area with readioactive material. [Deleted].

As to whether they have had the kind of accident where a nuclear warhead has perhaps been in a fire and the high explosives may have detonated, I am not aware of any such accidents.

Mr. **Rudd**. If we had evidence that has happened it would be very persuasive to support providing the funds needed to assure that it doesn't happen here. If it happens here we would be stopped dead in the water and we might not every get back on track.

The fact they may have made the mistakes that we shouldn't make would be persuasive in convincing our colleagues in the House and the Senate to do something about it. That is the reason I asked the question.

If you have that kind of information, I think it would be in the best interest of our country that we go ahead and use it.

NUCLEAR ACCIDENTS

Dr. **Wagner**. I don't think we need to turn to the Soviet experience. During the years between 1945 and 1968 roughly, we have had, if my memory serves me correctly, some 27 accidents involving nuclear weapons in which radioactive material either was dispersed or in imminent danger of being dispersed.

Since that time, you will remember, the explosion of the Titan missile in Damascus, Arkansas, we were just the luckiest nation in the world that we didn't have another accident that dispersed radioactive material. It was certainly not because we had a warhead that had the safety features that it should have had in it. That is one reason why we are retiring the Titan.

So we have ample experience on our own part of the kinds of safety problems you can get into.

Mr. **Rudd**. A little packet with that sort of information would certainly be helpful.

Dr. **Wagner**. We can certainly get that to you.

[The information follows:]

DEPARTMENT OF DEFENSE

NARRATIVE SUMMARIES OF ACCIDENTS INVOLVING U.S. NUCLEAR WEAPONS 1950-1980

Attached are unclassified summaries describing the circumstances surrounding 32 accidents involving nuclear weapons. Also attached is the Department of Defense (DOD)/Department of Energy (DOE) definition of "accident" used in researching this project.

Twenty-six of these summaries were first released by the Air Force in 1977; another was prepared following the Titan II explosion in Arkansas in September 1980. Those previously-released summaries are marked with a figure "1"; in some cases they include new material made available as a result of more recent research.*

There never has been even a partial inadvertant U.S. nuclear detonation despite the very severe stresses imposed upon the weapons involved in these accidents. All "detonations" reported in the summaries involved conventional high explosives (HE) only. Only two accidents, those at Palomares and Thule, resulted in a widespread dispersal of nuclear materials.

Nuclear weapons are never carried on training flights. Most of the aircraft accidents represented here occurred during logistic/ferry missions or airborne alert flights by Strategic Air Command (SAC) aircraft. Airborne alert was terminated in 1968 because of:

-- Accidents, particularly those at Palomares and Thule,

-- The rising cost of maintaining a portion of the SAC bomber force constantly on airborne alert, and,

-- The advent of a responsive and survivable intercontinental ballistic missile force which relieved the manned bomber force of a part of its more time-sensitive responsibilities. (A portion of the SAC force remains on nuclear ground alert.)

Since the location of a nuclear weapon is classified defense information, it is Department of Defense policy normally neither to confirm nor deny the presence of nuclear weapons at any specific place. In the case of an accident involving nuclear weapons, their presence may or may not be divulged at the time depending upon the possibility of public hazard or alarm. Therefore, in some of the events summarized here, the fact of the presence of nuclear weapons or materials may not have been confirmed at the time. Furthermore, due to diplomatic considerations, it is not possible to specify the location of the accidents that occurred overseas, except for Palomares and Thule.

Most of the weapon systems involved in these accidents are no longer in the active inventory. Those include the B-29, B-36, B-47, B-50, B-58, C-124, F-100 and P-5M aircraft, and the Minuteman I missile.

With some early models of nuclear weapons, it was standard procedure during most operations to keep a capsule of nuclear material separate from the weapon for safety purposes. While a weapon with the capsule removed did contain a quantity of natural (not enriched) uranium with an extremely low level of radioactivity, accidental detonation of the HE element would not cause a nuclear detonation or contamination. More modern designs incorporate improved redundant safety features to insure that a nuclear explosion does not occur as the result of an accident.

This list of accidents was compiled by DOD/DOE researchers during December 1980-January 1981. The researchers reviewed all available records of the military services and DOE, applying current definitions to determine if an event warranted categorization as an accident.

For example, one event not covered by these narratives was included in a "Chronology of Nuclear Accident Statements," released by DOD in 1968:

"March 18, 1963, Titan (I) Missile Burned in Silo near Moses Lake, Washington."

The researchers found, however, that only a small retrorocket on the missile had accidentally fired. The missile and its warhead were not damaged. That event does not warrant inclusion in a list of accidents involving nuclear weapons.

Another event from the 1968 list, involving a U.S. Navy Terrier missile (January 20, 1966; NAS Mayport, Florida) was not considered to be an accident, but has been categorized as a significant incident. In that incident, a nuclear warhead separated from the missile, and fell about eight feet. The warhead was dented; no other damage occurred.

The other events in this list that were also cited in the 1968 "Chronology....." are identified with a figure "2".**

The events outlined in the attached narratives involved operational weapons, nuclear materials, aircraft and/or missiles under control of the U. S. Air Force, U.S. Navy, or a DOE predecessor agency, the Atomic Energy Commission. The U.S. Army has never experienced an event serious enough to warrant inclusion in a list of accidents involving nuclear weapons. The U.S. Marine Corps does not have custody of nuclear weapons in peacetime and has experienced no accidents or significant incidents involving them.

To the best of our knowledge, this list is complete. Reporting requirements varied among the Services, particularly in the earlier period covered by these narratives, so it is possible but not likely that an earlier accident has gone unreported here. All later events, however, have been evaluated and are included if they fall within the established definition of an accident.

Current as of April, 1981

DEFINITION OF AN ACCIDENT

An "accident involving nuclear weapons" is defined as

-An unexpected event involving nuclear weapons or nuclear weapons components that results in any of the following:

--Accidental or unauthorized launching, firing, or use, by U.S. forces or supported allied forces, of a nuclear-capable weapon system which could create the risk of an outbreak of war.

--Nuclear detonation.

--Non-nuclear detonation or burning of a nuclear weapon or radioactive weapon component, including a fully assembled nuclear weapon, an unassembled nuclear weapon, or a radioactive nuclear weapon component.

--Radioactive contamination.

--Seizure, theft, or loss of a nuclear weapon or radioactive nuclear weapon component, including jettisoning.

--Public hazard, actual or implied.

February 13, 1950 / B-36 / Pacific Ocean, off Coast of British Columbia

The B-36 was enroute from Eielson AFB to Carswell AFB on a simulated combat profile mission. The weapon aboard the aircraft had a dummy capsule installed. After six hours of flight, the aircraft developed serious mechanical difficulties, making it necessary to shut down three engines. The aircraft was at 12,000 feet altitude. Icing conditions complicated the emergency and level flight could not be maintained. The aircraft headed out over the Pacific Ocean and dropped the weapon from 8,000 feet. A bright flash occurred on impact, followed by a sound and shock wave. Only the weapon's high explosive material detonated. The aircraft was then flown over Princess Royal Island where the crew bailed out. The aircraft wreckage was later found on Vancouver Island.

April 11, 1950 / B-29 / Manzano Base, New Mexico

Aircraft departed Kirtland AFB at 9:38 p.m. and crashed into a mountain on Manzano Base approximately three minutes later killing the crew. Detonators were installed in the bomb on board the aircraft. The bomb case was demolished and some high explosive (HE) material burned in the gasoline fire. Other pieces of unburned HE were scattered throughout the wreckage. Four spare detonators in their carrying case were recovered undamaged. There were no contamination or recovery problems. The recovered components of the weapon were returned to the Atomic Energy Commission. Both the weapon and the capsule of nuclear material were on board the aircraft but the capsule was not inserted for safety reasons. A nuclear detonation was not possible.

July 13, 1950 / B-50 / Lebanon, Ohio

The B-50 was on a training mission from Biggs AFB, Texas. The aircraft was flying at 7,000 feet on a clear day. Aircraft nosed down and flew into the ground killing four officers and twelve airmen. The high explosive portion of the weapon aboard detonated on impact. There was no nuclear capsule aboard the aircraft.

August 5, 1950 / B-29 / Fairfield Suisun-AFB, California

A B-29 carrying a weapon, but no capsule, experienced two runaway propellers and landing gear retraction difficulties on takeoff from Fairfield-Suisun AFB (now Travis AFB). The aircraft attempted an emergency landing and crashed and burned. The fire was fought for 12-15 minutes before the weapon's high explosive material detonated. Nineteen crew members and rescue personnel were killed in the crash and/or the resulting detonation, including General Travis.

November 10, 1950 / B-50 / Over Water, outside United States

Because of an in-flight aircraft emergency, a weapon containing no capsule of nuclear material was jettisoned over water from an altitude of 10,500 feet. A high-explosive detonation was observed.

March 10, 1956 / B-47 / Mediterranean Sea

The aircraft was one of a flight of four scheduled for non-stop deployment from MacDill AFB to an overseas air base. Take-off from MacDill and first refueling were normal. The second refueling point was over the Mediterranean Sea. In preparation for this, the flight penetrated solid cloud formation to descend to the refueling level of 14,000 feet. Base of the clouds was 14,500 feet and visibility was poor. The aircraft, carrying two nuclear capsules in carrying cases, never made contact with the tanker.

An extensive search failed to locate any traces of the missing aircraft or crew. No weapons were aboard the aircraft, only two capsules of nuclear weapons material in carrying cases. A nuclear detonation was not possible.

July 27, 1956 / B-47 / Overseas Base

A B-47 aircraft with no weapons aboard was on a routine training mission making a touch and go landing when the aircraft suddenly went out of control and slid off the runway, crashing into a storage igloo containing several nuclear weapons. The bombs did not burn or detonate. There were no contamination or cleanup problems. The damaged weapons and components were returned to the Atomic Energy Commission. The weapons that were involved were in storage configuration. No capsules of nuclear materials were in the weapons or present in the building.

* 1

May 22, 1957 / B-36 / Kirtland AFB, New Mexico

The aircraft was ferrying a weapon from Biggs AFB, Texas, to Kirtland AFB. At 11:50 a.m. MST, while approaching Kirtland at an altitude of 1,700 feet, the weapon dropped from the bomb bay taking the bomb bay doors with it. Weapon parachutes were deployed but apparently did not fully retard the fall because of the low altitude. The impact point was approximately 4.5 miles south of the Kirtland control tower and .3 miles west of the Sandia Base reservation. The high explosive material detonated, completely destroying the weapon and making a crater approximately 25 feet in diameter and 12 feet deep. Fragments and debris were scattered as far as one mile from the impact point. The release mechanism locking pin was being removed at the time of release. (It was standard procedure at that time that the locking pin be removed during takeoff and landing to allow for emergency jettison of the weapon if necessary.) Recovery and cleanup operations were conducted by Field Command, Armed Forces Special Weapons Project. Radiological survey of the area disclosed no radioactivity beyond the lip of the crater at which point the level was 0.5 milliroentgens. There were no health or safety problems. Both the weapon and capsule were on board the aircraft but the capsule was not inserted for safety reasons. A nuclear detonation was not possible.

* 1

July 28, 1957 / C-124 / Atlantic Ocean

Two weapons were jettisoned from a C-124 aircraft on July 28 off the east coast of the United States. There were three weapons and one nuclear capsule aboard the aircraft at the time. Nuclear components were not installed in the weapons. The C-124 aircraft was enroute from Dover AFB, Delaware when a loss of power from number one and two engines was experienced. Maximum power was applied to the remaining engines; however, level flight could not be maintained. At this point, the decision was made to jettison cargo in the interest of safety of the aircraft and crew. The first weapon was jettisoned at 4,500 feet altitude. The second weapon was jettisoned at approximately 2,500 feet altitude. No detonation occurred from either weapon. Both weapons are presumed to have been damaged from impact with the ocean surface. Both weapons are presumed to have submerged almost instantly. The ocean varies in depth in the area of the jettisonings. The C-124 landed at an airfield in the vicinity of Atlantic City, New Jersey, with the remaining weapon and the nuclear capsule aboard. A search for the weapons or debris had negative results.

* 1

October 11, 1957 / B-47 / Homestead AFB, Florida

The B-47 departed Homestead AFB shortly after midnight on a deployment mission. Shortly after liftoff one of aircraft's outrigger tires exploded. The aircraft crashed in an uninhabited area approximately 3,800 feet from the end of the runway. The aircraft was carrying one weapon in ferry configuration in the bomb bay and one nuclear capsule in a carrying case in the crew compartment. The weapon was enveloped in flames which burned and smoldered for approximately four hours after which time it was cooled with water. Two low order high explosive detonations occurred during the burning. The nuclear capsule and its carrying case were recovered intact and only slightly damaged by heat. Approximately one-half of the weapon remained. All major components were damaged but were identifiable and accounted for.

January 31, 1958 / B-47 / Overseas Base

A B-47 with one weapon in strike configuration was making a simulated takeoff during an exercise alert. When the aircraft reached approximately 30 knots on the runway, the left rear wheel casting failed. The tail struck the runway and a fuel tank ruptured. The aircraft caught fire and burned for seven hours. Firemen fought the fire for the allotted ten minutes fire fighting time for high explosive contents of that weapon, then evacuated the area. The high explosive did not detonate, but there was some contamination in the immediate area of the crash. After the wreckage and the asphalt beneath it were removed and the runway washed down, no contamination was detected. One fire truck and one fireman's clothing showed slight alpha contamination until washed. Following the accident, exercise alerts were temporarily suspended and B-47 wheels were checked for defects.

* 1

February 5, 1958 / B-47 / Savannah River, Georgia

The B-47 was on a simulated combat mission that originated at Homestead AFB, Florida. While near Savannah, Georgia, the B-47 had a mid-air collision at 3:30 a.m. with an F-86 aircraft. Following the collision the B-47 attempted three times to land at Hunter AFB, Georgia, with a weapon aboard. Because of the condition of the aircraft, its airspeed could not be reduced enough to insure a safe landing. Therefore, the decision was made to jettison the weapon rather than expose Hunter AFB to the possibility of a high explosive detonation. A nuclear detonation was not possible since the nuclear capsule was not aboard the aircraft. The weapon was jettisoned into the water several miles from the mouth of the Savannah River (Georgia) in Wassaw Sound off Tybee Beach. The precise weapon impact point is unknown. The weapon was dropped from an altitude of approximately 7,200 feet at an aircraft speed of 180-190 knots. No detonation occurred. After jettison the B-47 landed safely. A three square mile area was searched using a ship with divers and underwater demolition team technicians using Galvanic drag and hand-held sonar devices. The weapon was not found. The search was terminated April 16, 1958. The weapon was considered to be irretrievably lost.

* 1
** 2

March 11, 1958 / B-47 / Florence, South Carolina

On March 11, 1958 at 3:53 p.m. EST, a B-47E departed Hunter AFB, Georgia as number three aircraft in a flight of four enroute to an overseas base. After level off at 15,000 feet, the aircraft accidentally jettisoned an unarmed nuclear weapon which impacted in a sparsely populated area 6 1/2 miles east of Florence, South Carolina. The bomb's high explosive material exploded on impact. The detonation caused property damage and several injuries on the ground. The aircraft returned to base without further incident. No capsule of nuclear materials was aboard the B-47 or installed in the weapon.

November 4, 1958 / B-47 / Dyess AFB, Texas

A B-47 caught fire on take-off. Three crew members successfully ejected; one was killed when the aircraft crashed from an altitude of 1,500 feet. One nuclear weapon was on board when the aircraft crashed. The resultant detonation of the high explosive made a crater 35 feet in diameter and six feet deep. Nuclear materials were recovered near the crash site.

November 26, 1958 / B-47 / Chennault AFB, Louisiana

A B-47 caught fire on the ground. The single nuclear weapon on board was destroyed by the fire. Contamination was limited to the immediate vicinity of the weapon residue within the aircraft wreckage.

* 1
** 2

January 18, 1959 / F-100 / Pacific Base

The aircraft was parked on a reveted hardstand in ground alert configuration. The external load consisted of a weapon on the left intermediate station and three fuel tanks (both inboard stations and the right intermediate station). When the starter button was depressed during a practice alert, an explosion and fire occurred when the external fuel tanks inadvertantly jettisoned. Fire trucks at the scene put out the fire in about seven minutes. The capsule was not in the vicinity of the aircraft and was not involved in the accident. There were no contamination or cleanup problems.

* 1

July 6, 1959 / C-124 / Barksdale AFB, Louisiana

A C-124 on a nuclear logistics movement mission crashed on take-off. The aircraft was destroyed by fire which also destroyed one weapon. No nuclear or high explosive detonation occurred - safety devices functioned as designed. Limited contamination was present over a very small area immediately below the destroyed weapon. This contamination did not hamper rescue or fire fighting operations.

* 1
** 2

September 25, 1959 / P-5M / Off Whidbey Island, Washington

A U.S. Navy P-5M aircraft ditched in Puget Sound off Whidbey Island, Washington. It was carrying an unarmed nuclear antisubmarine weapon containing no nuclear material. The weapon was not recovered.

October 15, 1959 / B-52 / KC-135 / Hardinsberg, Kentucky

The B-52 departed Columbus Air Force Base, Mississippi at 2:30 p.m. CST, October 15, 1959. This aircraft assumed the #2 position in a flight of two. The KC-135 departed Columbus Air Force Base at 5:33 p.m. CST as the #2 tanker aircraft in a flight of two scheduled to refuel the B-52's. Rendezvous for refueling was accomplished in the vicinity of Hardinsberg, Kentucky at 32,000 feet. It was night, weather was clear, and there was no turbulence. Shortly after the B-52 began refueling from the KC-135, the two aircraft collided. The instructor pilot and pilot of the B-52 ejected, followed by the electronic warfare officer and the radar navigator. The co-pilot, navigator, instructor navigator, and tail gunner failed to leave the B-52. All four crewmembers in the KC-135 were fatally injured. The B-52's two unarmed nuclear weapons were recovered intact. One had been partially burned but this did not result in the dispersion of any nuclear material or other contamination.

June 7, 1960 / BOMARC / McGuire AFB, New Jersey

A BOMARC air defense missile in ready storage condition (permitting launch in two minutes) was destroyed by explosion and fire after a high pressure helium tank exploded and ruptured the missile's fuel tanks. The warhead was also destroyed by the fire although the high explosive did not detonate. Nuclear safety devices acted as designed. Contamination was restricted to an area immediately beneath the weapon and an adjacent elongated area approximately 100 feet long, caused by drain-off of firefighting water.

* 1
** 2

January 24, 1961 / B-52 / Goldsboro, North Carolina

During a B-52 airborne alert mission structural failure of the right wing resulted in two weapons separating from the aircraft during aircraft breakup at 2,000 - 10,000 feet altitude. One bomb parachute deployed and the weapon received little impact damage. The other bomb fell free and broke apart upon impact. No explosion occurred. Five of the eight crew members survived. A portion of one weapon, containing uranium, could not be recovered despite excavation in the waterlogged farmland to a depth of 50 feet. The Air Force subsequently purchased an easement requiring permission for anyone to dig there. There is no detectable radiation and no hazard in the area.

March 14, 1961 / B-52 / Yuba City, California

A B-52 experienced failure of the crew compartment pressurization system forcing descent to 10,000 feet altitude. Increased fuel consumption caused fuel exhaustion before rendezvous with a tanker aircraft. The crew bailed out at 10,000 feet except for the aircraft commander who stayed with the aircraft to 4,000 feet steering the plane away from a populated area. The two nuclear weapons on board were torn from the aircraft on ground impact. The high explosive did not detonate. Safety devices worked as designed and there was no nuclear contamination.

* 1
** 2

November 13, 1963 / Atomic Energy Commission Storage Igloo / Medina Base, Texas

An explosion involving 123,000 pounds of high explosive components of nuclear weapons caused minor injuries to three Atomic Energy Commission employees. There was little contamination from the nuclear components stored elsewhere in the building. The components were from obsolete weapons being disassembled.

January 13, 1964 / B-52 / Cumberland, Maryland

A B-52D was enroute from Westover Air Force Base, Massachusetts, to its home base at Turner Air Force Base, Georgia. The crash occurred approximately 17 miles SW of Cumberland, Maryland. The aircraft was carrying two weapons. Both weapons were in a tactical ferry configuration (no mechanical or electrical connections had been made to the aircraft and the safing switches were in the "SAFE" position). Prior to the crash, the pilot had requested a change of altitude because of severe air turbulence at 29,500 feet. The aircraft was cleared to climb to 33,000 feet. During the climb, the aircraft encountered violent air turbulence and aircraft structural failure subsequently occurred. Of the five aircrew members, only the pilot and co-pilot survived. The gunner and navigator ejected but died of exposure to sub-zero temperatures after successfully reaching the ground. The radar navigator did not eject and died upon aircraft impact. The crash site was an isolated mountainous and wooded area. The site had 14 inches of new snow covering the aircraft wreckage which was scattered over an area of approximately 100 yards square. The weather during the recovery and cleanup operation involved extreme cold and gusty winds. Both weapons remained in the aircraft until it crashed and were relatively intact in the approximate center of the wreckage area.

* 1
** 2

December 5, 1964 / LGM 30B (Minuteman ICBM) / Ellsworth AFB, South Dakota

The LGM 30B Minuteman I missile was on strategic alert at Launch Facility (LF) L-02, Ellsworth AFB, South Dakota. Two airmen were dispatched to the LF to repair the inner zone (IZ) security system. In the midst of their checkout of the IZ system, one retrorocket in the spacer below the Reentry Vehicle (RV) fired, causing the RV to fall about 75 feet to the floor of the silo. When the RV struck the bottom of the silo, the arming and fusing/altitude control subsystem containing the batteries was torn loose, thus removing all sources of power from the RV. The RV structure received considerable damage. All safety devices operated properly in that they did not sense the proper sequence of events to allow arming the warhead. There was no detonation or radioactive contamination.

December 8, 1964 / B-58 / Bunker Hill (Now Grissom) AFB, Indiana

SAC aircraft were taxiing during an exercise alert. As one B-58 reached a position directly behind the aircraft on the runway ahead of it, the aircraft ahead brought advanced power. As a result of the combination of the jet blast from the aircraft ahead, the icy runway surface conditions, and the power applied to the aircraft while attempting to turn onto the runway, control was lost and the aircraft slid off the left hand side of the taxiway. The left main landing gear passed over a flush mounted taxiway light fixture and 10 feet further along in its travel, grazed the left edge of a concrete light base. Ten feet further, the left main landing gear struck a concrete electrical manhole box, and the aircraft caught on fire. When the aircraft came to rest, all three crew members aboard began abandoning the aircraft. The aircraft commander and defensive systems operator egressed with only minor injuries. The navigator ejected in his escape capsule, which impacted 548 feet from the aircraft. He did not survive. Portions of the five nuclear weapons on-board burned; contamination was limited to the immediate area of the crash and was subsequently removed.

* 1

October 11, 1965 / C-124 / Wright-Patterson AFB, Ohio

The aircraft was being refueled in preparation for a routine logistics mission when a fire occurred at the aft end of the refueling trailer. The fuselage of the aircraft, containing only components of nuclear weapons and a dummy training unit, was destroyed by the fire. There were no casualties. The resultant radiation hazard was minimal. Minor contamination was found on the aircraft, cargo and clothing of explosive ordnance disposal and fire fighting personnel, and was removed by normal cleaning.

* 1

December 5, 1965 / A-4 / At Sea, Pacific

An A-4 aircraft loaded with one nuclear weapon rolled off the elevator of a U.S. aircraft carrier and fell into the sea. The pilot, aircraft, and weapon were lost. The incident occurred more than 500 miles from land.

January 17, 1966 / B-52 / KC-135 / Palomares, Spain

The B-52 and the KC-135 collided during a routine high altitude air refueling operation. Both aircraft crashed near Palomares, Spain. Four of the eleven crewmembers survived. The B-52 carried four nuclear weapons. One was recovered on the ground, and one was recovered from the sea, on April 7, after extensive search and recovery efforts. Two of the weapons' high explosive materials exploded on impact with the ground, releasing some radioactive materials. Approximately 1400 tons of slightly contaminated soil and vegetation were removed to the United States for storage at an approved site. Representatives of the Spanish government monitored the cleanup operation.

* 1
** 2

January 21, 1968 / B-52 / Thule, Greenland

A B-52 from Plattsburgh AFB, New York, crashed and burned some seven miles southwest of the runway at Thule AB, Greenland while approaching the base to land. Six of the seven crewmembers survived. The bomber carried four nuclear weapons, all of which were destroyed by fire. Some radioactive contamination occurred in the area of the crash, which was on the sea ice. Some 237,000 cubic feet of contaminated ice, snow and water, with crash debris, were removed to an approved storage site in the United States over the course of a four-month operation. Although an unknown amount of contamination was dispersed by the crash, environmental sampling showed normal readings in the area after the cleanup was completed. Representatives of the Danish government monitored the cleanup operations.

* 1
** 2

Spring 1968 / At Sea, Atlantic

Details remain classified.

September 19, 1980 / Titan II ICBM / Damascus, Arkansas

During routine maintenance in a Titan II silo, an Air Force repairman dropped a heavy wrench socket, which rolled off a work platform and fell toward the bottom of the silo. The socket bounced and struck the missile, causing a leak from a pressurized fuel tank. The missile complex and the surrounding area were evacuated and a team of specialists was called in from Little Rock Air Force Base, the missile's main support base. About 8 1/2 hours after the initial puncture, fuel vapors within the silo ignited and exploded. The explosion fatally injured one member of the team. Twenty-one other USAF personnel were injured. The missile's re-entry vehicle, which contained a nuclear warhead, was recovered intact. There was no radioactive contamination.

* 1

Mr. **Rudd**. Thank you for what you do, General Abrahamson, and for your dedication.

General. **Abrahamson**. Thank you, sir.

Mr. **Rudd**. It seems obvious to me that in SDI, there will have to be increased activities beyond R&D at some point in the future.

General **Abrahamson**. Yes, sir.

STRATEGIC DEFENSE INITATIVE

Mr. **Rudd**. Do you expect to have increases in the years 1987 through 1991? Is it going to be sizable? If it is going to be sizable, we ought to know that too so we can plan for it and justify it well ahead of the time rather than waiting for the last minute. When you take people by surprise and when you don't provide information so that they understand the problem thoroughly, they are going to be very negative.

General **Abrahamson**. Yes, sir. I think your point is very well taken, sir.

On the Department of Defense side, there, of course, have been dramatic increases in the past two years. As that goes forward, those increases will be leveling off at a rate which I think is much more sustainable.

The increase in the Department of Energy side, I believe, just has not been as visible as one would like [deleted].

So I think what you are seeing in terms of the Department of Energy budget and the increase associated with it is, in part, keeping a balanced program between the Department of Defense investment and the DOE investment, [deleted]. Of course, the FY 1986 budget was submitted prior to our being able, and to take advantage of that. Again. this is needed in order to understand the potential of nuclear systems possibly slated for use against the U.S. and obviously the potential these nuclear systems might have in the future.

It is probably unfortunate—and maybe others would like to comment here—that this is all classified as SDI research. What it really represents in larger ways is a new era of what is called the third generation of nuclear weapons. It is all put in this box and called SDI, but you recall we were concerned about it not just for use against a defensive system but also against offensive systems.

It really does represent a step in technology which is going on in the world, and I think that that is why it appropriately is in the budget. It is also unfortunate that it is only SDI, because it does represent this dramatic and dangerous area of——

Mr. **Rudd**. If the R&D is ever going to be worth a darn, we will have to put it to use. That is the basis of my question. I would hope that we could expect to see some increases if we are going to get there.

General **Abrahamson**. Oh, yes.

Mr. **Foley**. Let me add a comment, if I may, sir, to your question, because you ask a very good question. You ask a question many others ask. I keep coming down in defense of General Abrahamson, who doesn't need anybody to defend him. But still this is only R&D. The whole thing is in the early R&D stage right now, and people—not yourselves—but people keep categorizing it with exact milestones. So I say, wait a minute, it may fall on its nose because it is in the R&D stage.

We go on parallel paths and people ask, how are you coming, which one is best—and we drop off of one and if we can get on to one or two approaches, we could charge on up.

Mr. **Rudd**. That is because we want results.

Mr. **Foley**. And results is what we are after, but R&D takes some time.

Mr. **Bevill**. And money.

Mr. **Foley**. Yes, sir, and money.

Mr. **Rudd**. Well, we know that we have been doing this for a dozen years or more, people failed to take heed from General Keegan, I guess. What if they get there first, General?

General **Abrahamson**. I tried to indicate that I think that that would be the most dramatic thing in the equation. It is just not, are they going to build a new, more offensive system or continue their production on offensive systems.

Mr. **Rudd**. What if they are there first, though?

General **Abrahamson**. That is right. What happens is it changes the equation dramatically.

Let me try to put that in a little better perspective, if I may. Even with only a partial system, if the U.S. were clearly embarked with out present offensive system, embarked on a first-strike philosophy, you may well be able to overcome that.

But even a partially effective system against a ragged retaliatory strike after their first strike has dug out much of our capability, would be a quite effective kind of system. So what is really happening is that if they move forward in defenses, even with only a partial extrapolation of what they presently have, and obviously they are working on advanced technology as well, what they are doing is they are stealing the effectiveness of our present offensive deterrent at a very rapid rate.

Mr. **Rudd**. Well, they mix up conventional warfare and nuclear warfare, and they confuse everybody. That is what they try to do, and we don't do a very good job in getting the thing explained the way it should be explained.

I wish we, our office, the Defense Department and in every way possible, the White House, could remedy this situation.

I am sick at heart by what Daniel Ortega can do by the vast disinformation propaganda effort he is making that I am sure is funded by the Soviets. But we must do a better job than we are doing to explain these things.

I hope that you have some kind of operation that will do that, and if you don't have, I would implore you to try to find one.

General **Abrahamson**. I understand, and I share your feeling.

ESPIONAGE ACTIVITIES

Mr. **Rudd**. I am just voicing concerns that I hope will be heard, and I can't do more than that. But, Mr. Badolato, you spoke a great deal about security and the sophisticated equipment we have.

I want to tell you that I am very, very upset about the increases in espionage activities in this country that have come to light recently. You mentioned that Mr. Boykin, was here today.

Where is Mr. Boykin?

Mr. Boykin. Right here, sir.

Mr. Rudd. You are an officer with what agency?

Mr. Boykin. CIA, sir, I am on detail to DOE.

Mr. Rudd. I want to voice some concerns about security clearances.

The figure that you gave me here, unless I misheard, was that you would have 93 percent done by OPM, 7 percent by FBI.

Mr. Badolato. Yes, sir.

Mr. Rudd. That disturbs me, because I think it should be higher. Let me tell you why. Just the other day, someone from the White House called my office, and in a rather flamboyant manner wanted a background security check. They were doing a background check on a former intern in my office, and they wanted an over-the-phone evaluation as to what kind of person this guy was.

I am very upset about that because if that is the kind of personnel investigations that are conducted, there is no reason to even make the investigation.

When people make that type of request to my office, they are instructed to show up and identify themselves so we can see who we are talking to. We find out what kind of investigation they are trying to do, so we can help them do the job right.

I feel there is too much of this going on. I have 20 years of experience in this type of operation, so I know what I am talking about. All of these espionage cases could possibly have been stopped had there been a proper background check made.

Many of these background checks don't even include fingerprint examinations from the FBI to determine whether or not there was a criminal record involved. There have been a number of cases where problems could have been eliminated by a fingerprint check.

That would tell you something in itself. I know in your operation, you must have to do reexaminations from time to time, and this is where, much to the consternation of a lot of people, that lie detector test would be most valuable as a deterrent.

We talk about deterrents all the time, and this could be a real deterrent. If somebody goes bad along the way, we ought to know it, and there are ways to find out. I am sure you are able to do that. I am just voicing concerns.

I would like to know in a step-by-step operation what type of investigation you do on somebody that will be allowed access to secret material, for example.

The reason I say this is that the Soviets appear to have copies of everything we have.

Their aircraft designs and their nuclear plant designs were stolen from us. It was done not by any sophisticated surveillance activity. There is nothing more valuable than a live source of information, no matter what it is.

I don't care how sophisticated we get, the live source of information is the best information possible. It is easy for them, because of our individual liberty and freedom. They can come over here and acquire information through live sources.

I think that we have to be extremely careful about our background investigations. That is why I asked that question just to know what agency checks you make, and what kind of investigation you make as normal activity to clear one individual for a secret clearance.

SECURITY INVESTIGATIONS

Mr. **Badolato**. Yes, sir, I can. I would be more than happy to do that. As a preface, the DOE security clearance system is the only security system that is authorized by the Atomic Energy Act.

Under it, when an individual comes in and applies for a job and if it is as we say, I really hope that individual coming in from OPM to your office was not applying for a DOE position.

Mr. **Rudd**. Probably not.

Mr. **Badolato**. Because needless to say, 93 percent of our investigations are done by OPM. Even though done by OPM, I think you especially would appreciate that the majority of the investigators for OPM are former Bureau, retired FBI agents and so forth.

Mr. **Rudd**. Doesn't matter who they are, if they don't have the right guidelines.

Mr. **Badolato**. They do a full field investigation which is a lot of personal effort. An individual comes in and applies for a clearance. He applies for that clearance unless he is in our house. Otherwise, he applies to a contractor, and the contractor processes his application and forwards it to the area office, personnel clearance section. The personnel clearance section reviews this to see that it is done right. The FBI does fingerprint checks and we do run a national agency check on everybody to show you don't have a criminal record through various background checks. If it is for, say, secret, we would forward that up to the OPM or FBI and they would give it to one or more of their investigators, who would conduct a full source record check, contacts background, financial, et cetera.

Mr. **Rudd**. Background checks in the nature of full neighborhood investigation?

Mr. **Badolato**. Yes, all your neighbors.

Mr. **Rudd**. Credit investigation?

Mr. **Badolato**. Yes.

Mr. **Rudd**. All the employment investigation.

Mr. **Badolato**. Absolutely, sir. That would be in all those 93 percent that OPM does, as well as the 7 percent we would do through the FBI, which are those in higher restricted status, which are a more stringent type of clearance.

Mr. **Rudd**. And all prior residences?

Mr. **Badolato**. We go through the whole list, yes. I know from myself it would take two hours to type up and remember all of your residences back a number of years, and so forth.

We are very, very careful about this, I assure you.

NUCLEAR PROLIFERATION

Mr. **Rudd**. All right. Thank you. I feel a lot better about that. We talk about proliferation, Admiral, are we really attempting to ascertain whether our trading partners are involved in nuclear proliferation?

Mr. **Foley**. Yes, sir.

Mr. **Rudd**. For example what can we do about activities in India or Argentina?

Mr. **Foley**. There are a number of different things we can do. For one, all Intelligence Agencies provide information to us on the countries involved and we can decline to provide them with additional nuclear material or feeder material. We can bring back to the United States all materials which have been provided to these foreign countries. These are depleted materials that we bring back for reprocessing because we refuse to let them do that overseas.

Mr. **Rudd**. Sometime we get off on the wrong track and go overboard. In that way, we lose business and have, to France, Germany, and to Holland and others.

Well, let me just wrap this up as quickly as I can.

With regard to nuclear-related offense activities as opposed to defensive, when do we know if we go too far in one area. Is that something that we look at constantly?

Mr. **Foley**. Yes.

Mr. **Rudman**. To decide whether we have gone too far one way or the other?

Mr. **Foley**. Yes, sir. The others can expand. But this is an iterative process that goes on all the time.

From my experience in an area with the Joint Chiefs of Staff, it is examined constantly throughout the year to determine the balance. It comes in from the unified commanders with their requirements to execute their war plans as they see them. The balance between nuclear and conventional is a dynamic, iterative process that goes on all the time. Nothing stands still.

DUPLICATION OF EFFORTS

Mr. **Rudd**. One last question. With Gramm-Rudman-Hollings, we have to really look carefully at everything we do. We all know there is duplication of effort in any government activity but it is something we can't afford anymore. This is especially true with the Defense Department, because of all the adverse publicity.

I wonder if you have set-up any organization under your control to assess necessary cuts.

Mr. **Foley**. Speaking just within Defense Programs, the answer to that is yes, sir, we do. We have institutionalized programmatic reviews, for example. The Office of Military Application, directed by General Withers, does this with all our program managers out in the field who oversee the laboratories and the production facilities. We at Headquarters conduct overall program reviews to be sure we don't have any duplication of effort.

Mr. **Rudd**. Are you having any success?

Mr. **Foley**. Oh. yes, absolutely. We terminated programs as a result of these reviews.

Mr. **Rudd**. I thank you very much.

Thank you, Mr. Chairman.

Mr. **Myers**. If I can between all these heavy questions; I notice that this is St. Patrick's Day and, General Withers, you are wearing a green uniform.

General, did you think about wearing a green uniform this morning?

General **Abrahamson**. Unfortunately, I am not Irish. However, perhaps in spirit, I guess is my problem.

Mr. **Chappell**. He got a waiver from Tip.

Mr. **Fazio**. We put our secret material in green today.

Mr. **Myers**. Sure.

Mr. **Bevill**. The Chair recognizes Mr. Chappell.

Mr. **Chappell**. Thank you, Mr. Chairman.

NUCLEAR WARHEAD DETONATION

Dr. Wagner, will a warhead, a nuclear warhead explode on impact or is it dependent on some other happening for detonation?

Dr. **Wagner**. It is intended, Mr. Chappell, to require an electric signal which is derived in a very specialized way so that it can't be produced by random events or by accident.

There are some cases in which reentry vehicle warheads are designed so that fuzing sequence is generated by a signal from impact from the warhead striking the ground.

Mr. **Chappell**. The nature of the device is such that it won't explode just because of impact, isn't that correct?

Dr. **Wagner**. In accident situations, we try hard to keep it from exploding just because it runs into something. With this insensitive high explosive that the DOE people are now providing for weapons, it is much less likely to explode just on impact. You would have to make the distinction between a nuclear explosion and a nonnuclear explosion. None of the weapons——

Mr. **Chappell**. I am talking of nuclear weapons.

Dr. **Wagner**. None of the weapons we have today can explode with a nuclear explosion in any accident environment that we can imagine.

Mr. **Chappell**. Is that true of the Soviets?

Dr. **Wagner**. No, not necessarily. You have to work hard to make that the case. We worked hard for 40 years. [Deleted].

Mr. **Chappell**. Let me ask you this: The whole intent of SDI—let me move to General Abrahamson a minute—the whole intent of SDI is to find choices by which we can, through our surveillance, know where the threat may come from. We must then determine the nature of the threat, and work to develop tracking capabilities and acquisition capabilities with which to destroy the incoming weapon without a nuclear explosion.

Isn't that essentially what we are talking about in SDI?

General **Abrahamson**. Yes, sir, that is the ideal. I can't guarantee everybody that we know that we can prevent a nuclear warhead from going off. For example, if the Soviets chose to set up a fuzing scheme so that if we then ran into them with a mechanical device similar to the June 1984 Homing Overlay Experiment (HOE) it wouldn't go off.

But, obviously, if there were ways to prevent that, we are searching for it.

However, even if it went off in space, it is a very different situation than if it went off on the surface of the earth. In fact, in many cases, we don't believe that there would really be a noticeable destructive effect even if there were a major battle fought in space, except in the area of electromagnetic impulse.

Mr. **Chappell**. But the main thrust of the program is research and development looking to get the capability to acquire it, and destroy it in some sense before——

General **Abrahamson**. Before it strikes the United States or its allies.

Mr. **Chappell**. Before it impacts the earth.

General **Abrahamson**. Before it strikes the United States or our allies.

Mr. **Chappell**. Yes, sir.

General **Abrahamson**. Yes.

NUCLEAR BUDGET ACTIVITIES

Mr. **Chappell**. This budget is $7.6 billion, I believe, the budget before this committee.

Mr. **Foley**. Yes, sir.

Mr. **Chappell**. That is all nuclear?

Mr. **Foley**. It is lots of different things, sir.

Mr. **Chappell**. But it is defense related?

Mr. **Foley**. Yes, sir.

It includes such things as defense waste, and verification and control activities.

Mr. **Chappell**. How much of it is SDI?

General **Withers**. About $600 million in the Department of Energy budget, sir.

SDI TRANSFER OF FUNDS

Mr. **Chappell**. Does that include the $62 million you want to transfer?

General **Withers**. No, sir.

Mr. **Foley**. That is 1986 money.

Dr. **Wagner**. That is 1986 money.

Mr. **Chappell**. That is right. That is 1986 money you want to transfer. Do you know where it comes from?

General **Abrahamson**. I had to, as I indicated, take a billion-dollar cut under the overall program. What happened is the DOE transfer money is part of the restructuring that we have done in order to provide funding for the highest priority efforts within SDI. Indeed, we consider that a high-priority effort.

So I have had to restructure for a whole billion dollars, not $62 million, sir.

Mr. **Chappell**. I see. How much of the whole SDI program, General Abrahamson, is nuclear related?

Of the $2.75 billion which is appropriated through the defense process plus the monies here how much is involved in nuclear?

General **Abrahamson**. In 1986—this is only a rough estimate—it is approximately 10 percent of the overall program if you combine the two and then take the percentage that is nuclear within the Department of Energy. It is on that order.

In 1987, it does go up to a little less than 15 percent.

Mr. **Chappell**. So it's 15 percent or less of the combined resources for research and development.

General **Abrahamson**. Yes, sir.

Mr. **Chappell**. The remainder is obviously structured for non-nuclear procedures.

General **Abrahamson**. That is correct.

RAIL GUN

Mr. **Chappell**. With regard to the rail gun, what is the theory behind the rail gun?

General **Abrahamson**. The rail gun, is a cannon that one could put in space or even in Europe, for example, on the ground, but instead of the cannon being the projectile being fired by a shell, railroad, it is fired by an electromagnetic pulse, a set of coils which accelerate the shell to much higher velocity than you can get with a kind of a shell that you shoot with a howitzer or another kind of gun.

So it is fired with electromagnetic energy as opposed to chemical energy.

Mr. **Chappell**. Is this a kinetic weapon?

General **Abrahamson**. Yes, sir, it is a kinetic weapon.

Our hope is that we would be able to build approximately three to four-pound size projectiles that would travel at very high speeds in space, up to on the order of between seven and eight kilometers per second, so it can reach a long way and have a long range and destroy boosters or warheads in space.

On the ground and fired into the atmosphere, it can't go so fast because it would burn itself up.

DIRECTED ENERGY WEAPONS

Mr. **Chappell**. A lot of folks say that we can rid ourselves of nuclear weapons. Will we reach the point where we know enough about nuclear energy that we will be able to reduce the explosive nature enough that the weapon is in essence doing the same thing we do with conventional weapons except many times more efficient. Some of the writers I know have been talking about that.

Dr. **Wagner**. I will take a cut at that.

With the kinds of nuclear explosives that exist in our systems today, the yields are the minimum necessary for military effectiveness. The only way to further reduce effects is to make the yield smaller, and its military effectiveness diminishes with the undesired damage, also. I don't think that is the route to go.

General Abrahamson and Admiral Foley mentioned that the nuclear part of the SDI is pertinent to other things as well. That in particular is this directed-energy, nuclear-powered directed-energy weapon.

The reason that is in the direction you are asking about is that if you can, in effect, focus the energy right on the target so that very little else is disturbed or damaged or destroyed. That is sort of in the direction you are talking about. [Deleted.]

Mr. **Chappell**. In essence, you are talking about a nuclear gun that fires pellets, is that right?

General **Abrahamson**. Yes, sir.

Dr. **Wagner**. That is right.

General **Abrahamson**. Exactly right.

Dr. **Wagner**. [Deleted.]

Mr. **Chappell**. The purpose would be to reach the housing or the nose section of the weapon and cause it to explode without a nuclear explosion. Right?

Dr. **Wagner**. That is right.

PARTICLE BEAMS

Mr. **Chappell**. With reference to particle beams, we are talking about the ability to go through the skin.

Dr. **Wagner**. Yes.

General **Abrahamson**. Yes.

Mr. **Chappell**. And reach the brain and destroy it.

General **Abrahamson**. Yes.

Dr. **Wagner**. Yes.

Mr. **Chappell**. Lasers, particle beam, x-ray, and I assume that is the rest of it.

At this point, can you tell the committee of the progress that we have made in those areas.

General **Abrahamson**. In the various techniques, the neutral particle beam is the one that has the highest hope of being able to prevent even a nuclear explosion.

Mr. **Chappell**. That goes to the brain of the instrument. So you can put it off course or take out its circuits.

General **Abrahamson**. Neutral particle beams will penetrate inside a warhead while such things as lasers or some of the kinetic energy systems will not penetrate inside the warhead. Depending on what the Russians do, they might go off. [Deleted.]

Mr. **Chappell**. With the neutral particle beam?

General **Abrahamson**. Yes, sir. We have made tests with all of those kinds of mechanisms. What we have not done is been able to take one of the systems and create it at a high enough power that you can deploy it in space and use it that way. That is a future objective of the research program.

But we have done ground-in laboratory tests which demonstrate not only those techniques, but demonstrate that a neutral particle beam can be used for verification of space treaties because you can tell even against an environment where nuclear weapons are going off, that with a low level of radiation, that you do have some of the heavy materials that nuclear bombs are made of. And you can detect that with special detectors.

So it can be used for discrimination and verification as well

SDI PROGRESS

Mr. **Chappell**. Can you tell us how much progress you have demonstrated during the last year? Are we making rapid progress? Are we making moderate progress? Are we really moving?

General **Abrahamson**. For the areas we have been able to fund, I think we have made really incredible progress.

Mr. **Chappell**. Which are they?

General **Abrahamson**. Well, in the free electron laser on the ground, we have made enough progress to decide that that ought to be a primary weapon concept and to go full blast on that.

Mr. **Chappell**. You have been able to prove the concept sufficiently that it is one of the choices at this point?

General ABRAHAMSON. Yes, sir. In other areas, such as the space-based kinetic weapons, we have been able to——

Mr. CHAPPELL. Please explain that.

General ABRAHAMSON. Kinetic, this is a kind of rocket pod in the sky; perhaps the way to think about it is the concept that——

Mr. FAZIO. A sling shot.

General ABRAHAMSON. High Frontier talked about it as being an initial system in the future. There we are concentrating on bringing the size and weight of these systems down. Just early last year, the weight estimates for a missile that would be effective in space was on the order of [deleted] pounds. We not have concepts and have done some testing, although we have not built one of these things yet, where we believe that we could build a missile effectively in space that could be used this way to be on the order of [deleted.] pounds. That is a [deleted] reduction in weight.

Obviously, that also means a substantial reduction in cost and certainly in the cost of space transportation and all of the support that goes with one of those kinds of systems.

So our efforts have been in bringing down the size of some of the more conventional technology. Perhaps it is even more dramatic.

I am leaving Wednesday to go to the ministerial meeting. I am taking along some examples of basic technology that is contributing to that where I will be showing the kind of a gyroscope which is the basis that we have in our airplanes and missiles and in our satellites today. The first gyroscope sits in a big heavy black box and is about what we have in the F-16, which I though was a pretty advanced system when I was responsible for it. I will be bringing along the two ring gyro which is today's technology, and I'll have an example of tomorrow's technology. It is just a coil of fiber optics which is about that big and much, much reduced in weight. We already have working models of these coils of fiber optics.

So in each of these areas, what is happening is we are taking a technology and driving it down in size and cost and in fact that is the essence of this program—doing research to assure that not only will it work techniquely, but it will be affordable some day.

Mr. CHAPPELL. Would you tell us the consequences of this committee not supporting the SDI program.

General ABRAHAMSON. Let me break it into two parts. First of all, we believe the $62 million in 1986 is, in fact, very important in order to have a steady and ramp up toward the higher levels that we are talking about in fiscal 1987 and fiscal 1988. So that assures a smooth buildup.

What that buys is that it [deleted]. Those two in particular.

NUCLEAR PELLET GUN

Mr. CHAPPELL. Is the nuclear pellet gun adaptable to other types of warfare other than nuclear?

General ABRAHAMSON. No, it would be effective in space sir, but in the atmosphere that energy would be quickly absorbed.

Mr. CHAPPEL. Would that be ground based or what?

General ABRAHAMSON. You could put it on the ground either in missiles or submarines and pop it up and use it. That is one method of using it, the method that would keep us within the UN outer space treaty.

It would also [deleted] expand our technology base, which means you begin to ramp up unevenly with people. If we were not afforded that, frankly we would not able to make some of the most significant tests [deleted]. We need the combination of the fiscal 1986 monies as well as the fiscal 1987 increase [deleted]. The overall investment we are making on the rest of the program can or cannot be obviated by some of these nuclear techniques.

So it is a very, very important leverage item to understand how potent that might be.

R&D APPLICABLE TO CONVENTIONAL WARFARE

Mr. **Chappell**. Since we are spending 85 percent of SDI monies on nonnuclear, are you far enough along to identify areas where the research and development can be applied to conventional warfare?

General **Abrahamson**. There are many areas that we can define already and some are being exploited. I think that there is room for additional work and perhaps even an initiative to ensure that there is some small money set aside separate from SDI which would allow some of the conventional forces to take these things and invest them and apply them.

I can identify them.

Mr. **Foley**. That is being done in two ways: One is that the Army, for example, in work for others, has requested us to do continuing work for them in the areas of conventional munitions. We do this at Los Alamos and Sandia, and these are some of the same people that worked in the SDI technology, so it is a spinoff in conventional weaponry.

Mr. **Chappell**. Does that anticipate that some present weaponry can be improved?

Mr. **Foley**. Yes, sir.

General **Abrahamson**. Improved, yes.

Mr. **Chappell**. And costs can be driven down; is that logical or not?

Mr. **Foley**. Yes.

General **Abrahamson**. Let me say, I was recently in Israel. You mentioned rail guns; they ask, can they be used in tanks? They have a particular threat there and they think that way. They are not waiting just for us to give them the answer. [Deleted.]

Mr. **Chappell**. Gatlin type?

General **Abrahamson**. No, sir. [Deleted.]

Well, that is very important for their conventional troops.

Mr. **Chappell**. In the process of science, we move from theory to concept to proof of concept.

General **Abrahamson**. Yes, sir.

Mr. **Chappell**. From proof of concept we go to development and procurement.

General **Abrahamson**. Yes, sir.

Mr. **Chappell**. Can you eliminate testing as you move into the proof of concept?

General **Abrahamson**. No, sir, That is the essence of proof of concept.

Mr. **Chappell**. You have nothing until you prove the concept. So you certainly have to be testing at this point.

General **Abrahamson**. Yes.

NUCLEAR TESTS

Mr. **Chappell**. Is it possible for us to eliminate, to ban testing if we are going to know what we are doing? This is true with any other part of the scientific world also.

General **Abrahamson**. Let me speak for SDI rather than in the broader sense of your question.

Mr. **Chappell**. I would like to hear the other members comment on it, too. It concerns me on what we can do and seek to ultimately accomplish by banning tests as opposed to reducing the will of people to make war on an international basis.

General **Abrahamson**. The essence of research is to develop a theory or a concept, and then to test it to see that it works or not.

In the SDI program, we are in the research phase obviously, so that means that it is a sequence of trying new test hardware and testing, so it is build-test, build-test; that is exactly the way we proceed.

Hopefully, as I indicated, by the early 1990s we would have the confidence in the process so that one can make a prudent judgment to go ahead with development, and you will have the technology base to do that fairly quickly and at low cost, and certainly with confidence in numbers behind the cost.

That testing includes both testing of some non-nuclear as well as nuclear systems. Perhaps you can answer otherwise.

Dr. **Wagner**. I was going to answer simply—you can't eliminate testing of any technology, whether it is elevators or airplanes or radar or anything else, and hope to get anything out of it.

Mr. **Chappell**. You don't know whether you are wasting money or not.

Dr. **Wagner**. That is exactly right. You don't know what the other person is doing unless you can be sure that you can keep him from testing as well.

In the nuclear weapons area, it is no different. You have to test to understand the theories, you have to test them to define the concept and prove the concept, and you do have to continue testing even after you build the hardware because it deteriorates in subtle ways. While it is in the field, it rusts. This isn't classic rust, but to understand how much difference that makes, occasionally you have to do a nuclear test to find out.

The technology in nuclear warheads is simply like any other technology, a tool that we have at our disposal. It provides options for us and sometimes it provides particular weapons. You can use those options wisely or unwisely, but to preclude having options seems to me to be absolutely nuts.

Mr. **Chappell**. If we eliminated random testing, for example, of our munitions, we wouldn't know whether they are going to work or not.

Mr. **Foley**. You have to test.

Dr. WAGNER. That is right.

Mr. CHAPPELL. If you get away from testing, you simply have accumulation of concepts, but that is about as far as you could go. Isn't that correct?

Mr. FOLEY. Yes, sir. You can test components, but you can only go so far in testing components. Sooner or later, you have to put the whole thing together and test it.

Mr. CHAPPELL. Let me ask one more question.

SOVIET CONCERNS

Why do you suppose the Soviets are so concerned about SDI?

General ABRAHAMSON. Well, unlike——

Mr. CHAPPELL. Why are they willing to go back to the bargaining table now?

General ABRAHAMSON. I think what it represents is a challenge to what has been their tremendous momentum in which they have developed in the buildup of offensive weapons. If effective, it would certainly obviate a major part of their trillion dollar investment over the last many years in offensive weapons.

In addition to that, it would serve to counter their thrust toward defenses in a way that would make us less vulnerable to the intimidation that we are now susceptible to. So assuming that their objectives have not changed, then what it does is it really counters major moves that they have been able to proceed with in pretty much at their own pace and their own schedule and without challenge.

In addition, I think that they fear arousing again of this major investment in technology in that it be applied broadly and reinvigorate the——

Mr. CHAPPELL. I understand that for every dollar we spend, the Soviets will have to spend two or three dollars. Is that accurate and how do you determine that?

General ABRAHAMSON. I don't know that specific estimate. The key point is that the way we have been trying to approach the program is that we have—it was stated by Paul Nitze in terms of this fundamental criteria—in order to try to drive the Soviets to change their behavior so that they don't build more offensive missiles, we would like them to be faced with a choice, a choice that says, rather than invest in offensive systems to try to overcome an SDI, they would put their money hopefully on defenses which do not threaten us.

The way to do that is to understand which of their resources they must invest in their offensive systems and for us to choose the SDI concepts which will indeed be cost effective or drive them to the more expensive solutions if they want to buy more missiles. That is the whole idea, to change them away from more offensive missiles.

So we use that test and we will use it even more as our technology matures to ensure that in fact we are driving them to make the right choice, which will make our world more secure.

Mr. CHAPPELL. So that if we are able to defend against incoming ICBMs we would save a lot of money in the basing of MXs or whatever else we might have as offensive weaponry, isn't that correct?

General **Abrahamson**. I don't believe that we are talking about today's offensive systems. I think the proposals that have been brought foward for MX and Trident and all of those programs are making up for asymmetry of the past where the Soviets have invested and we have not.

What we are talking about the SDI is to try to avoid our having to make those kinds of similar investments in offensive systems in the future for maybe an MX II or MX III or a follow-on system.

In that sense, you are exactly right, sir, but I think it shouldn't be related to today's investment, which is making up for the past.

Mr. **Foley**. It is true it would be terribly disquieting, if I were the Soviets, to have the United States mobilize its entire technology base, its R&D community, with all the funding that goes with that for an all-out effort in this particular direction with all the computer technology and background that we have that they don't possess. So attempting to match or duplicate us for them would be one, technologically very difficult; and two, terribly expensive the time frame in which they may be able to do it might not be anywhere near where we can do it when we mobilize this as a nation.

That is what we are talking about. If I were the Soviets, I would find that terribly disquieting. If the U.S. could pull it off, I would probably have to change the direction in which I go; as General Abrahamson has said, it is terribly expensive and you force them to an option maybe they don't want to take right now.

Mr. **Chappell**. Do you agree with the philosophy then that we are trying to move away from mutual assured destruction?

General **Abrahamson**. Exactly right.

Mr. **Chappell**. Thank you, Mr. Chairman.

Mr. **Bevill**. The Chair recognizes Mr. Fazio.

Mr. **Fazio**. I feel like the old May West joke, so many men and so little time. I have so little time and so many questions, I probably ought to just fold my papers and submit them for the record at this point.

But I appreciate the good questions of my colleague, the man who has been I think such a strong supporter of yours in the role he has been playing on defense appropriations.

SDI TRANSFER FUNDS

I guess I still haven't got an answer as to what DOD will not do as a result of the $62 million transfer to DOE. I know why you want it, but I don't understand what we will not be doing.

You responded earlier, General Abrahamson, that you are restructuring the program. What element of the restructure is it we are referring to?

General **Abrahamson**. Well, unfortunately I didn't say that I will take out rail guns for this. I restructured the program based on the large cuts that Congress gave us in 1986. That overall restructuring of the program included over a billion dollars' worth of cuts.

Therefore, I have not made a choice between one or the other. I just started down my priority list.

Mr. **Fazio**. Yes.

General **Abrahamson**. That is, for the overall program. That doesn't mean that if for some reason the complete transfer were not available, there are not priorities that we would go back and re-examine them.

Mr. **Foley**. On the DOE side of the house, General Abrahamson comes to me and says, [deleted].

I would say, great, we are all with you 100 percent, but we don't have the money to do this. We don't have the money in our budget, but we would be happy to do it.

Mr. **Fazio**. We know very well how little you have in DOE.

Mr. **Foley**. But from our position as paupers, sir—

Mr. **Fazio**. You are the only office in DOE relatively well off. Everybody else is really a pauper in the operation.

Mr. **Foley**. I agree, sir, but there is a good reason for our level of funding. We need that money to be able to do things such as the Strategic Defense Inititative.

SDI INCREASE

Mr. **Fazio**. I understand. I just didn't understand what wouldn't be done at DOD. I know you were cut $1 billion, General, but you also have an increase of 75 percent over the previous year.

General **Abrahamson**. That is a true statement.

Mr. **Fazio**. That is a rather rapid increase. It was 100 percent the year before?

General **Abrahamson**. No. In fact, it wasn't anywhere near that.

Mr. **Fazio**. I am trying to recollect what the buildup has been in the last several years.

General **Abrahamson**. In 1984, in these areas of technology, and they were not focused on SDI but they were all areas of technology that were relevant to SDI, the Department of Defense separately from the Department of Energy was spending on the order of $950 million in these technologies.

Mr. **Fazio**. All right.

General **Abrahamson**. What we did is we ended up with $1.4 billion.

Mr. **Fazio**. Right.

General **Abrahamson**. So that is about a 40 percent increase.

Mr. **Fazio**. Yes.

General **Abrahamson**. Then in fiscal 1986, that 1.4 is now building up to 2.7, so you can see that that is about an 80 percent kind of—

Mr. **Fazio**. 75 or 80.

General **Abrahamson**. Increase that you have mentioned, yes. And our request this year is again double.

Now, if you compare that to, say, the development program for the F-16 or the B-1 or any of those, which are development programs where all of that is coming through one prime contractor or two prime contractors, then the kinds of factors that Dr. Brown and others have talked about, 30 percent increase, that is all that one can indeed prudently absorb. This is increasing a very large number of parallel programs and in fact starting new programs across a research scope that is unprecedented, have never been undertaken by this country. That is why the increase is so dramatic.

Mr. **Fazio**. Well, I think that the Defense Appropriations Committee needs to check also. In pursuit of our responsibilities under the Appropriations Committee, we need to keep tabs on where the money is going.

General **Abrahamson**. Of course.

Mr. **Fazio**. Obviously you are able to take $62 million and transfer it, I guess there is a question of whether you have the authority to do that or not.

It was stated earlier you may not have had the authority to transfer from DOD to DOE, isn't that correct?

General **Abrahamson**. We examined that very closely, looked at what is the authority—

Mr. **Fazio**. Without coming to Congress I mean.

General **Abrahamson**.—and looked at the intent of the Atomic Energy Act, and we determined that in fact of that $62 million, it should appropriately come through the Congress, yes. Therefore, our request.

Mr. **Fazio**. We appreciate that approach and the decision was the correct method of approaching the problem.

GRAMM-RUDMAN IMPACT

I guess I still have some doubt about whether we will be able to do that given the problems we face with Gramm-Rudman generally. There are very few agencies of the government that are going to find it easy not to accept their total share of the burden.

General **Abrahamson**. I think what is important within the SDI program funded between the two agencies of the Federal Government and between the Atomic Energy Act and the appropriations from the Department of Defense, we are balancing those accounts. We are not asking for additional money.

Mr. **Fazio**. I understand. I think the problem is that the Department of Energy is one of those areas of the budget that we didn't give as much flexibility as we gave the DOD in implementation of Gramm-Rudman.

I happen to sit on the conference committee that produced the conference report. I opposed Gramm-Rudman and I am one of the 12 trying to get it thrown out in the courts, but I think the people understand that the decision to give DOD flexibility was in order to get by that problem of having 7/12ths of the fiscal year and not wanting to force too many ridiculous cuts on the Agency.

We are having problems in the legislation branch and every other Committee on Appropriations is struggling with these problems now.

So far the Congress has approved two or three bills to allow funds to be taken from different parts of an agency.

SDI TRANSFER OF FUNDS

I would say that the struggle that we went through to get to that point politically was a rather strenuous one. To think that SDI, with the controversy that surrounds it, is simply going to be able to blithely transfer $62 million from DOD to DOE is politically questionable.

General **Abrahamson**. I would like to make one more point, if I might.

Your whole discussion is in the context of Gramm-Rudman.

Mr. **Fazio**. That is right.

General **Abrahamson**. This was not related to Gramm-Rudman. This related to looking at the overall program, looking at——

Mr. **Fazio**. You would have done this even if you had not had to take the cuts?

Mr. **Foley**. Yes.

Mr. **Fazio**. What was the cut you were required to take in Gramm-Rudman?

Mr. **Foley**. Three hundred and fifty-two million dollars.

Mr. **Fazio**. Had you not had to take that cut, you would have reprogrammed within DOE to make up this money.

Mr. **Foley**. No, sir.

Dr. **Wagner**. We started this before Gramm-Rudman.

Mr. **Fazio**. The submission of this request for transfer had preceded Gramm-Rudman?

General **Abrahamson**. We started considerations as we looked for the difficulties or as we looked [deleted]. We saw that in fact the budget that had been presented in FY 1986 did not represent a proper balance.

We spent a lot of time trying to figure out what was the right approach in that process. But that was done separately from Gramm-Rudman.

Mr. **Fazio**. So how did the absorption of the 4.3 percent cut in the DOE programs impacted on SDI research?

Mr. **Foley**. Four point nine percent was absorbed.

Mr. **Fazio**. What was the dollar impact on SDI?

Mr. **Foley**. Fourteen million.

Mr. **Fazio**. Fourteen million. So that has nothing to do with this request. I don't know where I got that idea.

Mr. **Foley**. Nothing at all.

Mr. **Fazio**. I just assumed that you were trying to in effect keep up with the program you had outlined, but you are trying to expedite this program.

General **Abrahamson**. Exactly right.

NUCLEAR DIRECTED ENERGY WEAPONS

Mr. **Fazio**. You have explained it on several occasions why you think that this nuclear-directed energy [deleted] isn't that really the case? Your reasoning is——

General **Abrahamson**. The reasoning is that we need to understand the real potential of this either in an enemy's hands or in our own. If it truly is as successful as the theory indicates, then that might cause us to have a very major change in the way we spend the other money and the rest of the program.

Therefore, an early understanding is vital.

Mr. **Fazio**. I guess I am still struggling with understanding why this particular program has broken out of the pack, so to speak.

General **Abrahamson**. It hasn't broken out of the pack; [deleted].

Mr. Fazio. Not to say we won't have some move ahead at some point. I realize the strategy requires a series of weapons at different points. You have to be able to attach a Soviet missile in——

General Abrahamson. I have made some choices on the DOD side as well.

SOVIET DEVELOPMENTS

Mr. Fazio. Is there something about the Soviet developments in this area that has motivated you?

General Abrahamson. Yes.

Mr. Fazio. Would you outline what you know about them?

General Abrahamson. As I indicated——

Mr. Fazio. I may have missed some of this early on and I apologize for that.

General Abrahamson. The——

Mr. Fazio. I have been here a while, but not the whole time.

General Abrahamson. [Deleted.]

Mr. Fazio. This is a reactive difference?

General Abrahamson. That is right.

Mr. Fazio. This has nothing to do with our choices for the SDI program?

General Abrahamson. I am not sure you can take them apart.

Mr. Fazio. Anything we learn may be of benefit and this is one area you feel we are behind.

General Abrahamson. No, let me see if I can put it another way around.

The essence of the SDI program is to, while we are developing lasers, also know what the Soviets can do to counter it.

Mr. Fazio. I understand.

General Abrahamson. So we are developing laser armor as well. If it is clear the laser armor is something that can be applied to missiles in a way that it defeats lasers, then we plan to, one, stop investing in lasers; and, two, I need to search for other alternatives.

It is exactly that philosophy, but applied to this third generation of nuclear weapons, the X-ray laser, and that I am applying it and trying to assure we understand that.

Mr. Chappell. Will the gentleman yield for just one question?

Mr. Fazio. I will be happy to yield.

NUCLEAR DIRECTED ENERGY WEAPONS

Mr. Chappell. Am I correct in my understanding when you are talking about nuclear-driven directed-energy weapons research—essentially that is what you are talking about here——

General Abrahamson. Yes, sir.

Mr. Chappell. You are talking about X-ray laser, hypervelocity pellets, microwaves, particle beams, and optical lasers, right?

General Abrahamson. Yes, it is more than just one, but I used that as an example, [deleted].

Mr. Chappell. You are trying to——

General Abrahamson. Either for or against us.

Mr. Chappell. And there are [deleted].

Dr. Wagner. No, I think not.

General **Abrahamson**. Less than that.

Dr. **Wagner**. Not all of the concepts are being pursued at the same rate of testing.

Mr. **Chappell**. [Deleted.]

General **Abrahamson**. [Deleted.]

Mr. **Chappell**. [Deleted.]

General **Abrahamson**. [Deleted.]

If, [deleted] it develops anywhere near the potential of the theoretical studies, it would have [deleted] effect on what we do—certainly on an SDI system in the future. Even on our offensive systems and the ability of our offensive deterrent should the Soviets use that against us.

Mr. **Chappell**. And this is the best place to do that.

General **Abrahamson**. Yes, it is the right place to do that.

GRAMM-RUDMAN IMPACTS

Mr. **Fazio**. Were all the cuts imposed on the Department of Defense by Gramm-Rudman made up by transfers and reprogramming within the Department?

General **Abrahamson**. No.

Mr. **Fazio**. There was press coverage on that point.

General **Abrahamson**. In fiscal 1986, there was a transition within the Department of Defense. It allowed some judgment between large funding areas and the SDI was exempted from those cuts in fiscal 1986.

Mr. **Fazio**. You were not required to take any reductions after the appropriations bill was signed into law.

General **Abrahamson**. That is correct.

Mr. **Fazio**. Admiral Foley.

Mr. **Foley**. We took 4.9 percent in defense programs because, in the Department of Energy, there is really no place else to look for other monies to make up for fully supporting SDI or anything else. The cuts had to come from across all Defense Programs activities.

We looked within DP as carefully as we could and came to the judgment after extensive discussion with General Abrahamson that we just can't take less out for SDI. We have to take the 4.9 percent out of our hide for SDI.

Mr. **Fazio**. What did you do in the DOE with regards to the Department's efforts to support the SDI?

I have been reading Defense Week about what you have had to absorb in terms of cuts in your program. Most of this refers to the reduction in the funding that the Congress imposed on you. Your program was reduced.

General **Abrahamson**. That is correct.

Mr. **Fazio**. To the $2.75 billion. These cuts refer to those reductions in the program.

General **Abrahamson**. Yes.

Mr. **Fazio**. What about the Department of Energy? What program cuts will now be incurred as a result of this 4.9 percent reduction?

General **Withers**. We took the 4.9 percent cuts roughly across the board—indeed we almost had to. So the cut that was taken in our nuclear-directed energy program was about 4.9 percent—as for other things.

Mr. **Fazio**. Across the board. You not only had no flexibility to avoid SDI, but within SDI you had no flexibility?

General **Withers**. That is correct, sir.

Mr. **Fazio**. Would you submit for the record the categories, programs, projects and activities——

General **Withers**. We did have some flexibility. But we looked at the priorities carefully and figured we had to do it that way so that we wouldn't adversely impact something else.

Dr. **Wagner**. But within SDI, there was flexibility in the $14 million cut. Cuts were taken in sensible ways rather than parceling it out.

Mr. **Fazio**. You are telling me there is flexibility——

Dr. **Wagner**. There was a misunderstanding. They did not have flexibility in taking the 4.9 percent cut in their SDI. But within that SDI $14 million cut——

Mr. **Fazio**. That is my question.

Mr. **Foley**. Let me clarify that. When Gramm-Rudman came along, we had flexibility. We could go from zero to 10 percent but we had to come out with an overall 4.9 percent.

Mr. **Fazio**. Right.

Mr. **Foley**. So we said, we cannot take that kind of reduction throughout DP and leave SDI untouched. So we said well, what can we get away with? What is the minimum and we discussed it and said, 4.9 percent. So we took 4.9 percent, or $14 million, and brought in the laboratory directors, research, and said, all right now, here is what we are up against. What can we cut down, how can we come out? These are the numbers we are talking about and that, in essence, is how we derived the cuts. We can submit those for the record.

Mr. **Fazio**. I would appreciate that. We need to know that.

[The information referred to follows:]

DOE SDI Nuclear Directed Energy Weapon Research

[Operating dollars in millions]

	Fiscal year 1986	Adjustment	Adusted fiscal year 1986
LANL	$47	$−2	$45
LLNL	73	−4	69
SNL	42	−2	40
NVO	120	−6	114
Total	282	−14	268

GRAMM-RUDMAN IMPACTS

Mr. **Fazio**. In my other subcommittee, we told them to come in and tell us how they took Gramm-Rudman. They have that right there because they sweated it out.

I think we need to know how the Department of Energy did generally, but certainly in the weapons program you should be able to provide that.

Mr. **Foley**. We have it, yes.

Mr. **Fazio**. I would like to know the impact on SDI, of course.

I understand it has been a restructuring of the directed-energy weapons program. I thought I understood the categories you had originally and I don't have a feel for the way the budget in 1987 seems to describe the program. What was the reason for doing that kind of restructuring?

SDI RESTRUCTURING

General **Abrahamson**. There were two reasons. The principal one was to take the concepts that fit best within our much more mature architectural and trade-off studies when we looked at the entire system. That offered us a means to begin to prioritize the overall Department of Defense budget as well as examine the effect of the investment in the Department of Energy.

The second was to try to absorb this billion dollars less than what our plan was. As I indicated earlier, what I did was since everybody was making choices, we could have just continued all the programs at the plan and shipped the program in general; or, and I didn't think that that was what I was being paid for, I thought my responsibility was to pick the ones that are the most productive. Therefore, I did that and I didn't cut. I cut a few programs out, mostly throttled back on some of the ideas that seemed to be less productive and kept the ones that have the potentially highest payoff, kept those in what I call the after-burner mode. What I mean by that is we made choices.

Mr. **Fazio**. I think we are all going to have to leave soon. We have been here an awfully long time. This has probably been the best hearing we have had on some of these issues.

I regret that I am still vague on some of what has been said. You know, I was beginning to understand space-based lasers, ground-based lasers, space-based particle beams, and now I have to learn particle beam technological integration and concept formation, and technical development planning.

You have to tell me a lot more in order for me to begin to understand what that means. I used to be on a planning commission and I used to get confused by that rhetoric. Do you understand what I am saying?

General **Abrahamson**. Of course I do.

Mr. **Fazio**. It is a little bit like a fog that has been spread upon the land and I am supposed to grope through it.

General **Abrahamson**. Sir, this is not a simple program. Unfortunately, it has been described by, particularly by our ciritics, in oversimplistic ways, and in fact——

Mr. **Fazio**. I am trying to stop doing that. I am trying to be more specific in my criticisms.

General **Abrahamsion**. Many of the very complex issues are simple issues or the relationship between systems and specific concepts, and we are now in a position to begin to do more of that to make those judgments and to invest the money we think in a more productive way. That is what that represents.

Let me give you an example. I believe that even more important than just the weapons concepts is the command and control problem.

Mr. **Fazio**. I certainly agree from what I have heard.

General **Abrahamson**. We have tried to accelerate that as much as is feasible. Obviously, you can't just throw money at it. It has to be a prudent investment. But we have done that.

The main monies to achieve that are to begin to build a ground-based test bed which will be a very large stimulation of the overall system some day.

That is under way at this point. That absorbs a lot of that increase. There are other integration studies that are part of it as well.

Mr. **Fazio**. That is an area that this committee has very little responsibility but it is certainly one that I would like to get more information about.

General **Abrahamson**. I would be happy to come over and provide information that you would like.

MODERNIZATION PROGRAM

Mr. **Fazio**. I would just put a whole lot of questions on SDI in the record and I have just one other area and I will be brief because I know everybody is tired.

That is, I guess, for Dr. Wagner. You know, my interest in the upgrading of our nuclear artillery. We have gone back and forth about whether or not we have been asked to get into the modernization program by the Europeans or whether we are leading them. They don't want to say yes because of the political considerations making that a diffiuct thing. I understand Mr. Lamont, the British Minister of State for Defense Procurement, as recently as January of this year, said no decisions have been made affecting the modernization of weapons systems in service by British forces. We expect to begin discussions with SACEUR in the spring about longer-term survivability and effectiveness.

That underlines what we said last year when we had the aborted debate on the floor under the worst of circumstances.

Dr. **Wagner**. Made the London Times; did you know that?

Mr. **Fazio**. There must be a pipeline here. But the concept of getting the Europeans on record still eludes us. Is that true?

Dr. **Wagner**. I think——

Mr. **Fazio**. I understand you are dressed up and ready to go. The impression is, you are not necessarily finding somebody over there to say come on over, we are ready to dance.

Dr. **Wagner**. [Deleted.]

Mr. **Fazio**. [Deleted.]

Dr. **Wagner**. [Deleted.]

Mr. **Fazio**. [Deleted.]

Dr. **Wagner**. [Deleted.]

Mr. **Fazio**. [Deleted.]

Dr. **Wagner**. Yes, indeed they do.

Mr. **Fazio**. When Mr. Lamont says what he is saying, he is careful to say [deleted].

Dr. **WAGNER.** Yes. [Deleted] you know, are about—[deleted]. It will be several years for them.

He was referring to the [deleted] specifically, I think. I think there is a rather strong endorsement collectively from NATO about most modernization of the tactical systems.

As you know, General Rogers put together his nuclear weapons requirements study, which asks specific nations to make specific commitments to particular elements of the modernization. He is having a [deleted] reaction to that.

I think it is a little premature to say how it will play out [deleted].

NUNN-JOHNSON WARHEAD LIMITS

Mr. **FAZIO.** We have talked about the Nunn-Johnson limit of 925 warheads. I understand Secretary Weinberger has indicated that he doesn't think that will be adequate.

I wonder what your thoughts were about what sort of future requests we might receive for relief from this authorization ceiling.

Dr. **WAGNER.** We said at the time of his report to the Congress, that the total of 925 was not adequate to cover the requirements for nuclear artillery in general. That meant that we would have to [deleted] which is currently in the plans General Rogers has put together since the last time you and I spoke on this. [Deleted] and I am not just using this in that funny sense. We don't have anything written down, we have not thought about how to make this play out over the next decade or so.

Mr. **FAZIO.** I will just wrap up by saying, I guess when you are in Congress you get exposed to a lot of different things. I was out in Montana and in Minnesota on Friday in two relatively conservative districts and States. We discussed the buildup we have had in defense. I am sure most of the members, if not all the members, of this committee have done the same thing during the last several years. It was in a district in the southwest corner of the State represented by one of the younger Members of Congress who has been a strong supporter of the President. He was his co-chairman in the last Presidential campaign, and we had a number of very emotional speakers. This is the heart of the farm crisis. A Republican banker as he described himself from Jackson, a Mr. Johnson, in many ways reminiscent of Mr. Myers who describes himself as a small country banker. He made a very impassioned speech about the President's budget priorities with regard to cutting 4-H programs and agriculture extensions, ending up by saying something exceedingly negative about the defense building in that context. It got a standing ovation from everyone in the room, which is kind of a suprise when you realize that a banker has probably turned down most of those farmers for a loan in recent years. I think he was attempting to put his finger on what many people are feeling across the country. For whatever reason, maybe lack of revenues, the deficit, whatever causes it, a lack of willingness to pursue the continued build up of our defenses at the pace that the Administration is requesting.

It is very frustrating for people who understand, I think, how much waste can be built into an on-again/off-again defense policy, one that rises and falls rapidly.

I would hate to see that. But I think we are about to see the end to the defense consensus that was built up over the 1970's and which came into flower, I would argue, in the late 1970's you would argue in the 1980's.

I guess I am frustrated by that fact. At the same time, I look at so many competing priorities within the defense budget. I went from SDI and the future defense against the Soviet offensive weapons to the nitty-gritty of deterrence with the nuclear artillery shells in Europe.

We are trying to do it all, and in Europe. The people we are trying to protect don't want to talk about it publicly.

I get frustrated when I think of how much it will cost to implement the research. It is R&D, but with implications that are very important. I don't want to knock building the attack submarines that I think we need. I certainly don't want to skip the Stealth bomber the way we skipped the B-1, but we have to make choices and we are not well prepared to make the choices. You probably feel you have made more choices in the last two years than you ever wanted to.

Something is going to give, and I am not satisfied it will be the kind of decisions that any of us will be proud of because they are going to be made in a rather short and sometimes emotional atmosphere.

You see people crying because they can't refinance their farm another year, and you don't come home and forget it. You realize this isn't partisan politics anymore; this goes into the heart of American conservatism.

We may have a different political atmosphere than we had in the late 1950's. We may have people who are much more successful at getting re-elected without the burdens of having to stand up for a farm policy that they don't want to be identified with. But that is just a mask for the fact that the society is rapidly changing its mind about things. Even if my constituents might be among those in the forefront of that mind change, I think it is too rapid. Of course, I thought the buildup was too rapid.

I realize I am lengthening an already lengthy hearing, and I will stop now, but I'm sorry that we are in this position, that is where we are and I couldn't help but make that point.

I feel rather deeply about it and sad about it. I am frustrated and I apologize, Mr. Chairman, for having taken all this time.

Mr. BEVILL. Mrs. Boggs.

CHALLENGER DISASTER IMPACT

Mrs. BOGGS. Thank you, Mr. Chairman.

I sit on HUD and the Independent Agencies that funds NASA. Has the Challenger disaster impacted adversely on the SDI program?

General ABRAHAMSON. Yes. I think you know, Mrs. Boggs, the first impact was a very personal one and emotional one for me. I knew and respected and admired all the members of that crew, and I know and have a high regard for the dedication to safety that the people within NASA have conducted.

Although one doesn't know where the final breakdown or the problem came, it clearly came. The specific impact on the SDI program is that we did have an important launch that was to have been the first one out of Vandenberg Air Force Base. There were to be two payloads on that.

One of them was an Air Force experimental payload and one was an SDI payload which was to understand more of its unclassified basic science payload essentially built at Utah at the University and built to study the infrared signature of the upper atmosphere. That will be delayed, and we don't know how much yet.

In terms of a longer term impact, we have just selected a group of contractors for an integrated flight in 1987 to look at this accurate pointing and tracking that one must do and hopefully that will not slip in a major way.

And then there will be flights that will go on every year and then the impact will be the fact that we are short as a nation in terms of space transportation not only because of the Challenger accident, because I think we were going to be short anyhow, frankly, and we must somehow recover that.

Again, part of our program here is that I do have a wedge for investment in space transportation, because that is so vital to SDI and the cost effectiveness of and SDI system in the future. Not an operational program but for research.

We are funding about a third of the National Aerospace plan concept and I have additional money which will be used when the joint NASA and Department of Defense study is complete this summer as to what technologies we should pursue for other aspects of space transportation.

Perhaps closer to home in this committee, we are also investing in funding space power which will be used again more broadly than the SDI, nuclear space power for civil applications as well as SDI, and that is an important element of the effort.

But again, it begins to show the broad scope of our investment. Those are the specific impacts.

Mrs. Boggs. We know what effect it has had on Galileo and other programs.

Thank you very much.

Thank you, Mr. Chairman.

Mr. Bevill. Are there other questions?

Well, this subcommittee obviously supports what you gentlemen are doing. We appreciate the good work you are doing.

As to what we can do in the way of appropriations for 1987, there are two big factors that are unknown at this point. That is the budget, and the authorization, which of course could place limitations on what we can do. Certainly we will do the best we can to help you carry on the important and very good work that you are doing.

We appreciate your testimony, each of you, and you have made a very fine presentation.

Each member has several questions for the record that we will submit to you and you may answer on the record.

[The questions follow:]

This committee stands adjourned now until 10 tomorrow morning.

[Questions for the record and the answers thereto follow:]

QUESTIONS AND ANSWERS PREPARED FOR THE RECORD

STRATEGIC DEFENSE INITIATIVE

Mr. Bevill. What are the DOD and DOE budgets for Strategic Defense in FY 1985, FY 1986 and FY 1987?

Admiral Foley. DOE SDI-related activities are funded primarily from the Weapons Research, Development, and Testing Program. Space nuclear power research efforts are funded by the Nuclear Energy Program. The following amounts have been budgeted for SDI-related technology base research by DOE:

FY 1985	FY 1986	FY 1987
$223.8M	$287.7M	$602.7M

The following amounts have been budgeted for SDI by DOD:

FY 1985	FY 1986	FY 1987
$1,397.3M	$2,759.2M	$4,812.9M

Mr. Bevill. Why is there such a large disparity in the size of the programs?

Admiral Foley. DOD is the overall SDI program manager and primary executory of the national program. By law, certain nuclear-related research must be accomplished by the Department of Energy. It is this relatively small, nuclear-related part of the overall SDI research program that is being accomplished with DOE funds.

Mr. Bevill. In what range would you expect the total DOD and DOE Strategic Defense program to cost through deployment?

Admiral Foley. Because the feasibility and utility of SDI concepts has not yet been determined, it is premature to assign an estimated cost.

COMPREHENSIVE TEST BAN

Mr. Bevill. What has been the past difficulties with Russia on implementing a test ban? Do we expect these problems to improve?

Admiral Foley. The Limited Test Ban Treaty restricts its signatories (including the United States, the United Kingdom, and the Soviet Union) to testing underground. Venting of radioactive material to the extent that it crosses national boundaries is forbidden.

DELETED

The last United States nuclear test venting was in 1970. As a result of strict precautions, there have been none since.

The Threshold Test Ban Treaty (TTBT) was signed by the United States and the Soviet Union in 1974 and became effective in 1976. It forbids underground testing in excess of 150 kt. The U.S. has yet to ratify this treaty in large part because compliance cannot be effectively verified under current circumstances. This verification issue results from uncertainties in attempting to estimate the yield of a test by remote seismic means. Several proposals have been made to the Soviets for the development and use of improved yield measurement procedures, but there have been no favorable responses. The United States has complied fully with the TTBT. Much controversy surrounds the question of Soviet compliance.

DELETED

The United States opposes a Comprehensive Test Ban (CTB) primarily because testing is necessary to maintain our current nuclear deterrent and to assure its continued viability into the future. In addition, verification of CTB compliance would be even more difficult than TTBT verification. Very low-yield, but valuable nuclear tests could go undetected or be difficult to distinguish from natural earthquakes or high-explosive experiments. The closed nature of the Soviet state could permit such activities to go unnoticed while they would be impossible in the United States. Without extensive inspection to verify compliance, the potential for contention between the nations over disputed cases would be immense.

The most recent public overtures from the Soviets indicating that they might allow some onsite inspection have been couched in somewhat vague terms and only mention the possible exchange of observers to resolve questionable cases after the fact. The possibility of verifying compliance under such circumstances is hardly better than the current state.

DELETED

INERTIAL CONFINEMENT FUSION FUNDING

Mr. Bevill. In FY 1986, $145 million was appropriated for the Inertial Confinement Fusion program. Funds for each laboratory were specifically identified. Please explain your current budget request of $22.5 million for this program.

Admiral Foley. The President's request for $22.5 million is not the Inertial Confinement Fusion program but for part of it. As stated in the budget request, these funds would support, at near the FY 1986 level, the University of Rochester, Naval Research Laboratory, and KMS Fusion, Inc., experimental activities. Arriving at the appropriate funding level for the major parts of the program, in the national weapons laboratories, requires adjustments among the Weapons Research, Development, and Testing; Inertial Fusion; and Strategic Defense Initiative programs. A single appropriation line item has been requested for these three programs.

Mr. Bevill. What is the status of construction of major facilities for the ICF program? What is the total cost of these facilities and what is the plan for their operation?

Admiral Foley. There are no construction activities for ICF in the FY 1987 budget request. Construction has been completed on all projects. Subject to availability of funds, the DOE plans to operate those facilities not already retired at approximately the FY 1986 level.

Mr. Bevill. What is the FY 1986 and FY 1987 budget for each laboratory and facility in the Inertial Confinement Fusion program?

Admiral Foley. The FY 1986 and FY 1987 budgets for Inertial Confinement Fusion are provided in a table which I would like to insert for the record.

(The information follows:)

Operating Funding for Inertial Confinement Fusion
(Dollars in Millions)

Research, Development, and Testing	FY 1986	FY 1987
Los Alamos National Laboratory	$ 29.5	$ 21.5
Lawrence Livermore National Laboratory	62.8	36.0
Sandia National Laboratories	21.9	29.0
Others	1.2	0
Total, Research, Development, and Testing	115.4	86.5
Inertial Confinement Fusion		
KMS Fusion, Inc.	13.1	12.0
University of Rochester	7.0	8.0
Naval Research Laboratory	2.5	2.5
Total, Inertial Confinement Fusion	22.6	22.5
Total	$138.0	$109.0

JOINT DEPARTMENT OF ENERGY/DEPARTMENT OF DEFENSE NEGOTIATIONS

Mr. Bevill. Do you see a strengthening or weakening of the role of DOE in joint DOE/DOD negotiations on weapon needs and characteristics?

Admiral Foley. I do not see the fundamental historical relationship between the two Departments changing. However, as a result of initiatives undertaken before and after the Blue Ribbon Task Group study, I do believe that the quality of the information that Department of Energy will bring to the joint arena will be strengthened, particularly in the area of costs associated with various weapon characteristics and features. This, in turn, should improve the overall quality of the decision making and tradeoff processes among weapons needs, features, and costs.

CAPABILITY VERSUS COST

Mr. Bevill. What role does Department of Energy (DOE) play in analyzing the increased defense capability versus the costs of various weapon configurations?

Admiral Foley. Our primary role is one of identifying the feasibility (in terms of technology and time) and cost of meeting stated Department of Defense (DOD) weapon requirements. We do not establish requirements as that is expressly a DOD responsibility. We do, however, participate fully in the definitional and tradeoff process that matches DOE technology options and related costs with these stated requirements. It is our responsibility to make the DOD decision makers clearly aware of the costs of the technology options available to them. To the extent that we can improve the quality and timeliness of this information, the overall decision-making process will be improved.

STATUS OF DOE SAFEGUARDS AND SECURITY

Mr. Bevill. What is the status of the effort to significantly increase the safeguard and security of the DOE complex?

Admiral Foley. The Department has made and continues to make significant progress in terms of site-specific upgrades as well as policy initiatives to improve the security posture at its critical facilities. This progress was reaffirmed in September 1985 when a Special Project Team reported to Secretary Herrington that "any adversary who attempts to gain control over or steal a nuclear weapon, a critical weapon component, or special nuclear material would face a high probability of failure." However, we must continue to enhance our security posture because upgrading facilities built 25-30 years ago to counter the perceived threat of the 1980's is a difficult, costly, and time consuming process that will

DELETED

Examples of our improvements include substantial increases in the number of our protective force personnel, from 2700 to nearly 5000. The protective force is also better trained and better equipped than ever before and is now a paramilitary, proactive force capable of protecting our national security interests. In addition, the Department is using helicopters at the four largest DOE sites for enhanced surveillance and response during security emergencies. High-tech perimeter detection systems have been installed at almost all our facilities. Lastly, our fabric of deterrence, in terms of access controls, barriers, guard towers, hardened sites, and security response team capabilities is as good as any security system in the United States.

While our ability to mitigate the outsider threat has improved dramatically, we now find it necessary to shift the emphasis of our safeguards and security program DELETED

In this regard, the Department is working very hard to develop and implement an DELETE

:o the maximun extent possible.

DELETE

:he Department will not be completely satisfied with the protection being afforded its critical assets.

DEPARTMENT OF ENERGY SAFEGUARDS AND SECURITY CROSSCUT BY LOCATION AND PROGRAM SOURCE

Mr. Bevill. Please provide a table showing the Budget Authority for safeguards and security for FY 1983 - FY 1987. Please provide this information by location and source of funds.

Admiral Foley. I will provide that information for the record.

(The information follows:)

DEPARTMENT OF ENERGY
SAFEGUARDS AND SECURITY
FY 1983 - FY 1987 CROSSCUT BY FACILITY
(BA in Thousands)

ORGANIZATION/FACILITY	FY 1983 ACTUAL	FY 1984 ACTUAL	FY 1985 ACTUAL	FY 1986 ADJUSTED	FY 1987 REQUEST
ALBUQUERQUE OPERATIONS OFFICE					
Albuquerque Direct	37,317	41,107	47,902	47,295	60,744
Bendix	4,860	5,123	5,475	5,926	6,341
Los Alamos National Laboratory	20,961	32,298	55,207	55,255	43,499
Mound	5,816	8,369	13,613	14,503	16,725
Pantex	9,385	12,252	15,462	19,907	27,156
Pinellas	3,699	9,504	9,772	11,206	8,807
Rocky Flats	16,756	30,177	35,592	26,631	26,501
Sandia National Laboratory	35,279	43,515	48,598	48,300	42,285
Total Albuquerque	134,073	182,345	231,621	229,023	232,058
CHICAGO OPERATIONS OFFICE					
Chicago Direct	-	2,095	2,114	2,271	2,335
Ames National Laboratory	275	463	423	394	467
Argonne National Laboratory	3,270	12,590	12,595	11,024	12,231
Brookhaven National Laboratory	3,221	3,743	7,373	8,479	6,565
New Brunswick Laboratory	3,450	2,941	4,054	4,032	4,404
Solar Energy Research Institute	158	158	158	188	175
Total Chicago	10,374	21,990	26,717	26,388	26,177
IDAHO OPERATIONS OFFICE	11,673	14,723	20,601	22,653	25,668
NAVAL PETROLEUM	-	1,290	1,390	1,396	1,307
NEVADA OPERATIONS OFFICE	24,145	41,870	44,935	56,360	66,339
OAK RIDGE OPERATIONS OFFICE					
Oak Ridge National Laboratory	1,121	1,220	2,005	2,323	2,238
Oak Ridge Direct	50,311	64,430	95,422	98,471	126,333
Total Oak Ridge	51,432	65,650	97,427	100,794	128,571
PITTSBURGH NAVAL REACTORS	4,003	7,486	6,914	7,360	7,174
RICHLAND OPERATIONS OFFICE	28,521	35,102	54,626	50,037	48,529
SAN FRANCISCO OPERATIONS OFFICE					
Lawrence Livermore National Lab	22,817	36,974	51,461	60,225	50,408
SAVANNAH RIVER OPERATIONS OFFICE	40,054	56,895	111,412	92,731	126,372
SCHENECTADY NAVAL REACTORS	3,642	6,172	8,012	10,535	11,430
STRATEGIC PETROLEUM RESERVE OFFICE	4,985	6,115	12,309	12,807	11,742
HEADQUARTERS	37,338	36,995	45,042	49,352	53,412
TOTAL	373,057	513,607	712,467	719,661	789,187

DEPARTMENT OF ENERGY
SAFEGUARDS AND SECURITY
FY 1983 - FY 1987 CROSSCUT BUDGET BY PROGRAM

(Dollars in Thousands)

	FY 1983 ACTUAL	FY 1984 ACTUAL	FY 1985 ACTUAL	FY 1986 ADJUSTED	FY 1987 REQUEST
Nuclear Energy Research and Development.......	16,096	20,589	22,824	21,390	24,844
Naval Reactors Development....................	9,745	13,658	14,926	17,895	18,604
Remedial Action and Waste Technology..........	167	138	132	134	141
Defense Waste and By-Products Management......	1,911	7,447	12,933	15,493	22,869
Magnetic Fusion...............................	527	1,858	1,801	1,937	1,989
Naval Petroleum and Oil Shale Reserves........	0	1,290	1,390	1,396	1,307
Uranium Enrichment Activities.................	26,256	31,895	36,092	35,527	41,253
Nuclear Waste Fund............................	0	0	1,075	1,243	1,268
Solar Energy..................................	158	158	158	188	175
Weapons Activities............................	172,709	255,156	341,819	373,062	389,420
Nuclear Safeguards and Security...............	43,580	49,273	56,239	53,344	62,595
Materials Production..........................	60,266	87,643	162,069	136,882	163,875
Security Investigations.......................	28,500	29,500	34,010	32,200	33,300
Environmental Research and Development........	0	75	582	782	737
High Energy Physics...........................	0	1,195	2,506	2,649	1,988
Basic Energy Sciences.........................	2,326	2,961	5,392	6,627	6,106
Multi-Program General Purpose Facilities......	3,200	2,300	1,100	0	0
Technical Information Management Program......	0	236	453	450	300
Strategic Petroleum Reserve...................	4,985	6,115	12,309	12,807	11,742
Management and Administration.................	2,631	2,120	2,131	2,240	2,224
Subtotal..............................	373,057	513,607	709,941	716,246	784,737
Other...	0	0	2,526	3,415	4,450
TOTAL.................................	373,057	513,607	712,467	719,661	789,187

SIZE OF AND EXPENDITURES FOR DEPARTMENT OF ENERGY GUARD FORCES

Mr. Bevill. Please provide a table showing the size of guard forces and expenditures for guard forces of each location. Please provide this information for FY 1983-FY 1987.

Admiral Foley. I will provide, for the record, a table showing the size of guard forces and expenditures for guard forces at each location for FY 1983 through FY 1987. I would like to point out that during last year's submittal we did not provide a breakdown of the guard force expenditures at each location for FY 1983 and FY 1984 due to the fact that centralized records were not maintained prior to FY 1985. We were, however, able to obtain the FY 1983 and FY 1984 guard force expenditures at each location, and I am now providing this information for the record.

(The information follows:)

SECURITY FORCE SIZE AND EXPENDITURES
($ in Thousands)

FACILITIES	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987	
	Size/Expenditures		Size/Expenditures		Size/Expenditures		Size/Expenditures		Size/Expenditures	
Albuquerque Operations [1/]										
Pantex Plant	214	$ 10,205	246	$ 12,446	267	$ 14,506	345	$ 18,349	409	$ 21,302
Los Alamos National Lab	207	6,821	284	9,110	310	11,160	276	12,000	299	16,500
Mound Laboratory	72	2,500	93	3,300	162	6,400	121	6,600	115	6,600
Rocky Flats Plant	170	9,388	203	11,317	210	8,973	230	9,128	230	8,973
Sandia National Lab	176	4,400	179	5,500	152	7,600	162	6,400	161	6,720
Bendix	81	3,039	100	3,700	103	4,477	105	4,965	106	5,674
Pinellas	74	1,770	84	3,470	94	3,628	70	3,928	73	4,250
Al (Feds)	13	261	13	271	12	279	12	241	12	246
TOTAL	1,007	$ 38,384	1,202	$ 49,114	1,310	$ 57,023	1,321	$61,611	1,405	$ 70,265
Chicago Operations										
Argonne Nat. Lab-East	57	$ 3,054	75	$ 3,600	77	$ 3,890	74	$ 3,369	74	$ 3,326
Argonne Nat. Lab-West	27	1,467	41	1,747	41	1,724	45	2,153	45	2,248
Battelle-Columbus	34	1,155	34	1,185	34	1,296	34	1,252	36	1,350
Brookhaven National Lab	36	1,300	44	1,600	52	2,100	66	3,970	66	3,095
TOTAL	154	$ 6,976	194	$ 8,132	204	$ 9,010	219	$ 10,744	221	$ 10,019
Idaho Operations Office										
Idaho Nat. Eng. Lab	103	$ 2,832	247	$ 7,163	293	$ 8,550	293	$ 9,115	313	$ 12,833
Nevada Operations										
Nevada Test Site and Las Vegas Sites	210	$ 8,011	231	$ 10,289	300	$ 13,932	300	$ 15,549	300	$ 16,111
Tonopah	55	2,750	57	2,900	55	3,400	64	4,000	70	4,150
TOTAL	265	$ 10,761	288	$ 13,189	355	$ 17,332	364	$ 19,549	370	$ 20,261

[1/] Security responsibility for Tonopah has been transferred to Nevada Operations. Accordingly, all data is now included under Nevada Operations, and all numbers for Albuquerque and Nevada have been adjusted.

SECURITY FORCE SIZE AND EXPENDITURES
($ in Thousands)

FACILITIES

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987	
	Size	Expenditures	Size	Expenditures	Size	Expenditures	Size	Expenditures	Size	Expenditures
Oak Ridge Operations 2/										
Portsmouth Gaseous Diffusion Plant	122	$ 5,178	123	$ 7,355	159	$ 8,212	152	$ 8,595	152	$ 7,844
Oak Ridge Gaseous Diffusion Plant	68	2,269	77	2,561	84	2,716	59	1,890	59	1,959
Oak Ridge Nat. Lab	60	1,922	64	2,201	73	2,615	71	2,848	70	2,870
Paducah Gaseous Diffusion Plant	44	1,233	49	1,445	56	1,729	57	1,998	57	2,076
Y-12	218	5,972	311	9,649	441	13,084	483	14,808	491	19,289
S&C (OR Federal Bldg.)	*	*	*	*	40	1,900	43	1,290	45	1,420
Westinghouse (Nat. Lead)	[illegible]	*	*	*	52	1,492	57	2,110	57	2,349
Strategic Petroleum Reserve (SPR)	175	2,886	221	3,936	236	5,340	257	6,995	251	7,527
TOTAL	687	$ 19,460	845	$ 27,147	1,141	$ 37,088	1,179	$ 40,534	1,182	$ 45,334
Pittsburgh Naval Reactors										
Naval Reactors Facility at Idaho		$ 695		$ 1,114		$ 1,400		$ 2,048		$ 1,892
Westinghouse-Bettis Atomic Power Lab	*DELETE*	1,423	*DELETE*	1,261	*DELETE*	1,633	*DELETE*	2,048	*DELETE*	1,892
Shippingport**		695		586		0		0		0
TOTAL		$ 2,813		$ 2,961		3,033		4,096		$ 3,784
Richland Operations	291	$ 15,082	380	$ 18,280	380	$ 21,126	409	$ 23,319	417	$ 26,597

2/ Oak Ridge Operations has security responsibility for the Strategic Petroleum Reserve (SPR). Accordingly, all SPR data is now included under Oak Ridge Operations Office.

* Numbers not available for submission.

** Shippingport no longer in operation.

SECURITY FORCE SIZE AND EXPENDITURES
($ in Thousands)

FACILITIES

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987	
	Size	Expenditures	Size	Expenditures	Size	Expenditures	Size	Expenditures	Size	Expenditures
San Francisco Operations										
Lawrence Livermore National Laboratory	180	$ 6,780	207	$ 7,137	197	$ 8,295	197	$ 9,525	197	$ 10,100
Sandia National Lab - Livermore	68	1,625	82	1,920	72	2,546	81	3,600	86	4,050
Energy Systems Group	45	1,957	50	1,868	50	1,700	50	1,926	50	2,003
TOTAL	293	$ 10,362	339	$ 10,925	319	$ 12,541	328	$ 15,051	333	$ 16,153
Savannah River Operations	428	$ 11,500*	540	$ 12,621	632	$ 16,764	729	$ 22,544	772	$ 24,935
Schenectady Naval Reactors										
Knolls Atomic Power Lab	DELETE	$ 2,000	DELETE	$ 2,600	DELETE	$ 3,200	DELETE	$ 3,400	DELETE	$ 3,650
Windsor Site		475		500		1,000		1,050		1,550
TOTAL		$ 2,475		$ 3,100		$ 4,200		$ 4,450		$ 5,200
DOE Headquarters	169	$ 3,137	141	$ 2,137	148	$ 2,139	148	$ 3,350	148	$ 3,500
GRAND TOTAL	3,555	$123,782	4,356	$154,769	4,953	$188,806	5,185	$214,363	5,358	$238,881

* Estimate

INVENTORY OF PASSENGER MOTOR VEHICLES

Mr. Bevill. Please provide a table showing the inventory of passenger motor vehicles funded by Atomic Energy Defense Activities. Provide this by type of vehicle and location.

Admiral Foley. The total number of passenger vehicles funded by Atomic Energy Defense Activities is 1,732. A breakdown by type of vehicle and location is shown in a table which I would like to insert in the record.

(The information follows:)

Passenger Vehicle Inventory
As of September 30, 1985
Atomic Energy Defense Activities

	Sedans	Station Wagons	Ambulances	Buses	Total
Albuquerque	77	17	13	17	124
Idaho	124	22	4	126	276
Nevada	508	30	10	32	580
Oak Ridge, Y-12	55	0	2	4	61
Richland	259	0	5	60	324
San Francisco, LLNL	106	19	3	2	130
Savannah River	273	9	5	0	287
Total Atomic Energy Defense Activities	1,402	97	42	241	1,782

PURCHASE OF PASSENGER MOTOR VEHICLES

Mr. Bevill. For FY 1985 and FY 1986, please provide the authority to purchase passenger motor vehicles and the actual number purchased.

Admiral Foley. In FY 1985, the Energy and Water Development Appropriation Act, Atomic Energy Defense Activities Appropriation, Public Law 98-360, authorized the purchase of up to 354 passenger motor vehicles. The Department actually purchased 222 passenger motor vehicles. Similarily, in FY 1986, Public Law 99-141 authorized the purchase of up to 435 passenger motor vehicles and to date the Department has purchased 155 such vehicles.

NUMBER OF DEPARTMENT OF ENERGY MOTOR VEHICLES FOR SAFEGUARDS AND SECURITY

Mr. Bevill. Please provide a listing of the number of motor vehicles required for safeguards and security in FY 1983, FY 1984, FY 1985, FY 1986, and FY 1987.

Admiral Foley. I will provide, for the record, a listing of the number of motor vehicles utilized by safeguards and security activities in FY 1983 through FY 1987.

(The information follows:)

VEHICLES

Albuquerque Operations	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Amarillo Area Office					
Pantex Plant					
Pickup 4X2	33	33	30	30	30
Suburban	2	2	2	2	2
4X4	0	0	14	31	31
Step Van	0	0	2	2	2
Van, Passenger	0	0	1	1	1
Viking	0	0	3	11	22
Armored Personnel Carrier	3	3	3	3	3
Van	2	2	3	3	3
TOTAL	40	40	58	83	94
Los Alamos Area Office					
Los Alamos Nat. Lab					
Pickup 4X2	40	40	40	40	40
Pickup 4X4	1	1	1	1	1
Peacekeeper	4	0	0	0	0
Viking	0	2	12	16	18
Sedan	0	3	3	3	3
4X4	3	3	1	1	1
Step Van	0	2	3	3	3
TOTAL	48	51	60	64	66
Dayton Area Office					
Mound Plant					
4X4	0	5	5	5	5
Suburban	0	0	4	4	4
Pickup	5	5	5	5	5
Step Van	0	0	1	1	1
Marv	0	1	2	2	2
TOTAL	5	11	17	17	17

VEHICLES

Albuquerque Operations	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Rocky Flats Area Office					
Rocky Flats Plant					
4X4	5	5	11	8	6
Van	5	7	8	5	5
Pickup	1	5	8	7	6
2-ton Truck	3	3	3	3	3
Jeep	1	1	1	1	1
Sedan	2	3	3	3	3
V-100	2	0	0	0	0
Peacekeeper	0	6	6	6	6
TOTAL	19	30	40	33	30
Sandia Area Office					
Sandia National Laboratory					
Sedan	1	1	1	1	1
Step Van	1	2	2	2	2
Ambulance	2	3	3	3	3
Station Wagon	11	11	11	11	11
4X4	1	4	7	7	7
Firetruck	0	0	1	1	1
V-100	0	1	4	4	4
Marv	1	1	1	1	1
Viking	1	1	5	5	5
TOTAL	18	24	35	35	35
Kansas City Area Office					
Bendix					
Sedan	2	2	1	0	0
Van, Passenger	0	0	1	1	1
Mini Van	0	0	1	1	1
1/2-ton Truck	0	0	1	2	2
TOTAL	2	2	4	4	4

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Albuquerque Operations					
Pinellas Area Office					
Pinellas Plant					
4X4	1	2	4	4	4
Peacekeeper	0	1	1	1	1
TOTAL	1	3	5	5	5
Central Training Academy					
Motorized Carts	*	*	2	2	2
Vans	*	*	2	2	2
Pickup	*	*	2	2	2
Sedan	*	*	1	1	1
4X4	*	*	1	1	1
TOTAL	*	*	8	8	8
Transportation Safeguards Division					
Tractor-Cab	44	44	44	57	63
Suburban	48	48	48	48	50
Van	0	0	0	23	50
SST**	33	33	39	45	45
TOTAL	125	125	131	173	208
Albuquerque TOTAL	258	286	358	422	467

* CTA not yet operational
** Safe-Secure Trailer

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Chicago Operations					
Argonne National Lab-East					
Step Van	1	1	1	1	1
Jeep	2	2	1	0	0
Sedan	9	9	9	8	9
Suburban	2	2	2	3	3
Armored Car	0	0	1	1	1
Van	0	0	0	1	0
TOTAL	14	14	14	14	14
Argonne National Lab-West					
Sedan	1	0	0	0	0
Jeep Wagon	2	0	0	0	0
4X4	1	3	4	4	4
V-100	1	1	1	0	0
Peacekeeper	0	1	1	0	0
TOTAL	5	5	6	4	4
Battelle-Columbus					
Sedan	1	1	1	1	1
4X4	1	1	1	1	1
TOTAL	2	2	2	2	2
Brookhaven National Lab					
Jeep	0	0	0	0	4
4X4 Carryall	0	0	1	1	0
Sedan	1	1	1	1	8
Van	2	2	2	2	0
Pickup	3	3	5	5	1
4X4 Pickup	0	0	1	1	0
TOTAL	6	6	10	10	13
Chicago TOTAL	27	27	32	30	33

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Idaho Operations					
Idaho National Engineering Lab					
Sedan	6	2	2	2	2
Station Wagon	1	0	0	0	0
Large Pickup	3	8	3	6	6
Small Pickup	4	4	9	9	9
4X4	13	35	35	43	43
1½ Ton Van	0	1	1	2	2
Van (15 passenger)	0	0	1	1	1
Viking	0	0	0	1	2
Peacekeeper	0	0	1	0	0
TOTAL	27	50	52	64	65
Nevada Operations					
Nevada Test Site					
Sedans	19	19	19	19	19
Station Wagons	1	1	1	1	1
4X2 Pickup	106	113	113	115	115
4X4	12	12	12	12	12
Van	14	15	17	18	18
Peacekeeper	6	9	9	9	9
V-100	3	3	3	4	6
Motorcycles	0	4	4	4	4
TOTAL	161	176	178	182	184

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Nevada Operations					
Tonopah					
4X4 Pickup	*	*	5	5	5
Sedan	*	*	1	1	1
Van	*	*	6	6	6
Motor Home/Mobile Command Post	*	*	1	1	1
Fire Truck	*	*	2	2	2
4X2 Pickup	*	*	15	15	15
TOTAL			30	30	30
Nevada TOTAL	161	176	208	212	214
Oak Ridge Operations					
Portsmouth Gaseous Diffusion Plant					
V-100	3	3	3	3	3
Peacekeeper	2	2	2	2	2
Type-50 Van	2	2	0	0	0
Type-50 Pickup	1	6	8	8	8
Type-51 4X4	17	17	22	19	19
Electric Cart	2	2	2	1	1
TOTAL	27	32	37	33	33

* Data unavailable for these years.

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Oak Ridge Operations					
Oak Ridge Gaseous Diffusion Plant					
V-100	1	1	1	1	1
Peacekeeper	1	1	1	1	1
Type-50 Van	2	2	2	1	1
Type-50 Pickup	4	1	0	0	0
Type-50 4X2	3	7	10	9	9
Panel Truck	1	1	1	1	1
TOTAL	12	13	15	13	13
Oak Ridge National Lab					
Peacekeeper	1	1	1	1	1
Type-12 Sedan	1	1	1	1	1
Type-50 Van	1	2	1	1	1
Type-53 4X4	4	5	10	10	10
Ambulance	2	2	2	2	2
TOTAL	9	11	15	15	15
Paducah					
Type-12 Sedan	1	0	0	0	0
Type-50 Pickup	1	1	1	2	2
Type-50 4X2	5	5	6	5	5
Type-53 4X4	0	0	0	2	2
Station Wagon	0	1	1	1	1
TOTAL	7	7	8	10	10

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Oak Ridge Operations					
Y-12					
Type-52 Van	0	0	1	1	1
V-100	2	2	2	2	2
Peacekeeper	7	7	7	7	7
Type-12 Sedan	1	1	0	0	0
Type-50 Van	7	12	5	5	5
Type-50 Pickup	15	19	7	4	4
Type-50 4X2	7	7	30	30	30
Type-52 1-Ton Pickup	1	1	0	0	0
Type-51 4X4	0	3	3	3	3
Type-53 4X4	0	4	4	4	4
Type-52 Carryall 4X2	0	0	0	7	7
TOTAL	40	56	59	63	63
Strategic Petroleum Reserve					
Type-50 4X2	4	4	4	25	25
Type-51 4X4	21	21	21	7	7
TOTAL	25	25	25	32	32
S&C (Federal Building)					
Type-12 Sedan	3	0	0	0	0
Type-50 Pickup	0	1	3	6	6
Type-51 4X4	0	8	6	5	5
Station Wagon	3	4	0	0	0
TOTAL	6	13	9	11	11
Westinghouse Materials					
Type-12 Sedan	1	1	1	1	1
Type-50 Van	0	0	0	1	1
Type-50 Pickup	3	4	4	3	3
Type-50 4X2	0	0	0	2	2
TOTAL	4	5	5	7	7
Oak Ridge TOTAL	130	162	173	184	184

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Pittsburgh Naval Reactors					
Bettis Atomic Power Lab					
Vans	2	2	2	2	2
4X4	1	1	2	2	2
TOTAL	3	3	4	4	4
Naval Reactors Facility (Idaho)					
Sedan	2	2	2	2	2
Pittsburgh TOTAL	5	5	6	6	6
Richland Operations					
V-150	0	0	2	3	3
V-100	2	2	2	2	2
Step Van	0	0	1	1	1
4X4	14	14	14	14	14
Van, Passenger	3	2	2	3	3
Sedan	30	29	44	44	44
Pickup	1	2	3	3	3
Boat	1	2	2	2	2
TOTAL	51	51	70	72	72
San Francisco Operations					
Lawrence Livermore National Lab					
Pickup	8	8	8	8	8
Peacekeeper	6	4	7	7	7
Sedan	19	19	19	19	19
Vans	2	2	2	2	2
TOTAL	35	33	36	36	36

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Sandia National Lab (Livermore)					
Pickup	3	3	3	0	0
Station Wagon	1	1	1	1	1
Suburban	0	0	1	1	1
4X4	0	0	0	6	6
TOTAL	4	4	5	8	8
Rocketdyne					
Pickup	7	4	3	4	3
Jeep 4X4	1	1	1	0	0
Station Wagon	2	2	0	0	0
Sedan	1	1	0	0	0
Van	3	4	3	4	3
TOTAL	14	12	7	8	6
San Francisco TOTAL	53	49	49	52	50
Savannah River Operations					
Law Enforcement Sedan	*	10	12	16	18
Sedan	52	62	58	56	30
Pickup	*	10	10	22	49
Van (Passenger)	*	4	4	4	1
Cargo Van	*	2	2	4	8
4X4	*	10	10	9	0
4X2	*	5	1	1	0
Wrecker	*	1	1	1	1
Ambulance	*	0	1	1	1
School Bus	*	0	1	1	1
Boat (Boston Whaler)	*	0	0	1	1
Peacekeeper	8	8	8	8	8
TOTAL	60	112	108	124	118

VEHICLES

	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Schenectady Naval Reactors					
Knolls Atomic Power Lab					
Sedans	2	2	2	2	2
Vans	1	1	0	0	0
4X4	1	1	2	2	2
TOTAL	4	4	4	4	4
DOE FIELD OFFICE TOTAL	776	922	1060	1170	1213

INVENTORY OF DEPARTMENT OF ENERGY AIRCRAFT FUNDED BY DEFENSE PROGRAMS

Mr. Bevill. Please provide a table showing the inventory of aircraft funded by Atomic Energy Defense Activities. Provide this by type of aircraft and location.

Admiral Foley. I will provide, for the record, a table showing the inventory of aircraft by type and location funded by Atomic Energy Defense Programs activities.

(The information follows:)

AIRCRAFT

	Number	Type	Location
Albuquerque Operations	2	Beech Super King Airs	Kirtland AFB
	3	DC-9	Kirtland AFB
	3	Dehavilland DASH-7	Kirtland AFB
	2	Dehavilland Otters	Kirtland AFB
	1	Cessna L-19 Single Engine Fixed Wing	Tonopah
TOTAL	11		
Chicago Operations			
None			
Idaho Operations	2	222 Bell Helicopters	INEL[1/]
Nevada Operations	2	B.O. Helicopter	NTS[2/]
	2	B.O. Helicopter	Las Vegas
	2*	B.O. Helicopter	Andrews AFB
	1	Cessna Citation II Twin Engine Jet	Las Vegas
	1	Beechcraft King Air 200 Fixed Wing Engine Turbo	Las Vegas
	1*	Convair 580 Turboprop	Las Vegas
	1*	King Air A 100	Andrews AFB
	1*	Twin Bonanza E-50 Reciprication Prop	Las Vegas
	1*	Turbo Beach 18 Volpar Turboprop	Las Vegas
TOTAL	12		

1/ Supports safeguards and security activities.

2/ These two helicopters support safeguards and security activities. All other NV aircraft support Defense Programs' NEST activities.

* Denotes aircraft not purchased with Defense Programs funds. Aircraft were obtained through excess or transferred to DOE via other U.S. Government agencies.

AIRCRAFT

Pittsburgh Naval Reactors			
None			
Oak Ridge Operations			
None			
Richland Operations (RL)	2	Aerospatiale 350D Helicopters	RL[1/]
San Francisco Operations (Lawrence Livermore National Laboratory)	1	F-27 Falkner Prop Plane	Livermore Airport
Savannah River Operations	1	MBB BK 117 Twin Engine Helicopter	SRP[1/]
	1**	MBB BK 117 Twin Engine Helicopter	SRP
	1	"Huey" Helicopter (on Loan under separate purchase order from NOAA)	SRP[1/]
TOTAL	3		
Schenectady Naval Reactors			
None			
All DOE Sites--TOTAL	31 (13 Helicopters; 18 Fixed Wing Aircraft)		

** Not operational due to 9/9/85 accident.

]COMPUTER LEASES AND COMPUTER PROCUREMENTS[

Mr. Bevill. Please provide a table showing the computer leases and computer procurements for Atomic Energy Defense Activities for FY 1985, FY 1986, and FY 1987.

Admiral Foley. The following table, which I would like to insert for the record, summarizes the computer leases and computer purchases for major computer items. Please note that of the $64,982,000 for computer leases in FY 1987, only $24,665,000 is for new leases and the remainder is for funding to continue computer items acquired in previous fiscal years.
(the information follows)

SUMMARY OF COMPUTER LEASES AND COMPUTER PURCHASES

(Dollars in Thousands)

Computer Purchases	FY 1985	FY 1986	FY 1987
Research and Development Testing	$26,932	$31,900	$42,900
Production and Surveillance	19,475	19,250	17,900
Materials Production	3,000	12,965	1,290
Defense Waste and Byproducts Management	2,152	966	—
Naval Reactors	1,248	2,970	20,500
Total Computer Purchases	$52,807	$68,051	$82,590
Computer Leases			
Research and Development Testing	$27,000	$31,440	$41,260
Production and Surveillance	9,886	14,053	17,360
Materials Production	42	641	729
Defense Waste and Byproducts Management	2,245	2,803	5,633
Naval Reactors	660	355	—
Total Computer Leases	$39,833	$49,292	$64,982

COMPUTERS

Mr. Bevill. What percentage of the computing work performed in Research, Development, and Testing is directed at Strategic Defense Initiatives activities? Provide this for FY 1985, FY 1986, and FY 1987.

Admiral Foley. The percent of computing work performed in Research, Development, and Testing that is directed at Strategic Defense Initiatives (SDI) activities is difficult to provide as not all computer work is solely applicable to one program. The nuclear weapons laboratories indicate that the computing workload associated with SDI ranges from about 10 percent to 25 percent of the total computing effort for FY 1985 and FY 1986. It is estimated that the range will be higher in FY 1987 since the SDI effort as a percent of the total weapons research, development, and testing effort will increase.

Mr. Bevill. Please describe the status of the development of Class VII computers and the need for this computational capability at both Livermore and Los Alamos.

Admiral Foley. We believe that there may be at least two different Class VII computers available in FY 1987. Advanced computers at Livermore and Los Alamos are essential for:

- modeling complex physics for advanced concepts, such as x-ray lasers;
- modeling three-dimensional features;
- understanding physical phenomena which cannot be measured experimentally;
- more accurate numerical methods; and
- increased scientist and engineer productivity.

Our ability to treat each of these topics is limited today by machine capability rather than by computational physics capability. The current computers do not have adequate speed nor memory to address models necessary to accomplish the above activities. Current problems can run up to 100 hours. We have three-dimensional methods and codes, but adequate resolution of some key processes would require several orders of magnitude increase in memory size over that now projected. In many cases, we have developed more accurate methods, which are essential to continued progress in enhanced safety, reduced intrinsic radiation, tailored outputs to achieve military effectiveness with minimum damage, directed energy weapons, and in physics understanding. The utilization of these more accurate methods is entirely dependent upon greatly expanded computer capacity.

The Class VII machines will have substantially increased clock speeds and numbers of processors, at comparable cost to Class VI machines of today, making them extremely cost effective. It should be noted that the number of complex phenomena that must yet be studied to meet program missions requires not only the next generation of supercomputers, but several generations to come.

STRATEGIC DEFENSE INITIATIVES

Mr. Bevill. Why is it necessary to incrementally increase the computer requirements because of SDI requirements? Why can't the requirements for SDI be met within existing requirements?

Admiral Foley. The computing requirements are not increasing solely because of SDI requirements. Advanced computers are essential for:

- modeling complex physics for advanced concepts, such as x-ray lasers;
- modeling three-dimensional features;
- understanding physical phenomenon which can not be measured experimentally;
- more accurate numerical methods; and
- increased scientist and engineer productivity.

It was considered reasonable and appropriate that because the SDI activities level is increasing significantly in FY 1987 a portion of the computer purchases should be allocated to SDI. It is important to note that, while some work can be identified with SDI, it is the same type of advanced research that we would pursue for the weapons research and development technology base.

]COMPUTER COORDINATION[

Mr. Bevill. Please describe your efforts to coordinate your computer development with other parts of the Department.

Admiral Foley. The Department of Energy Office of ADP Management, which reports to the Assistant Secretary for Management and Administration, has a well-established ADP Long Range Planning Process to systematically coordinate Department of Energy's computer activities. In this process, ADP requirements are initially established by the individual sites and for each Departmental program at that site. Sites also take into consideration existing capacity and then forecast their need for additional computing resources over the planning period. Site plans are then subjected to a vigorous review process by the operations office, program office, the central office having overall ADP management oversight, and other senior management officials. During this review, consideration is given to the validity of the programmatic requirements, the reasonableness of funding estimates, the identification and resolution of any issues, and other computing alternatives available. This process culminates in an annual Departmental ADP Long Range Plan.

GSO AND INVENTORY BALANCES

Mr. Bevill. Please provide a table showing GSO and inventory balances for this appropriation by activity and by location for FY 1985, FY 1986, and FY 1987.

Admiral Foley. I would be please to provide a table for the record showing these balances.

(The information follows:)

Atomic Energy Defense Activities
GSO Balances by Activity
Operating Expenses
(Dollars in Thousands)

	FY 1985 Actual Ending GSO Balance	FY 1986 Estimated Ending GSO Balance	FY 1987 Estimated Ending GSO Balance
Operating Expenses			
Weapons Activities			
Research and Development..............	$ 207,969	$ 200,750	$ 219,750
Testing..............................	73,692	70,532	91,632
Production and Surveillance...........	590,536	542,586	468,190
Program Direction.....................	3,223	1,916	1,916
Total Weapons Activities............	875,420	815,784	781,488
Verification and Control Technology.....	13,476	9,936	11,436
Materials Production....................	183,835	156,859	165,209
Defense Waste and Byproducts Management.	51,784	45,341	49,866
Nuclear Safeguards and Security.........	16,716	11,571	11,571
Security Investigations.................	9,434	9,438	9,438
Naval Reactors Development..............	159,271	156,751	142,551
Total Atomic Energy Defense Activities....	$ 1,309,936	$ 1,205,680	$ 1,171,559

Atomic Energy Defense Activities
GSO Balances at Major Defense Locations
(Dollars in Thousands)

	FY 1985 Actual Ending GSO Balance	FY 1986 Estimated Ending GSO Balance	FY 1987 Estimated Ending GSO Balance
Amarillo Plant (Pantex)	$ 42,248	$ 41,707	$ 37,206
Ashtabula Extrusion Plant	365	117	117
Bettis Atomic Power Laboratory	52,249	106,740	99,643
Fernald Feed Materials Production Center	14,840	1,596	2,596
Idaho National Engineering Laboratory	20,202	19,991	21,632
Kansas City Plant	186,656	205,810	186,024
Knolls Atomic Power Laboratory	64,147	47,919	44,419
Los Alamos National Laboratory	68,268	63,383	68,050
Mound Laboratory	48,895	36,829	32,029
Nevada Test Site	36,186	42,144	55,789
Oak Ridge National Laboratory	112,066	85,955	69,837
Pinellas Plant	35,524	33,902	30,102
Richland Production Facilities	54,967	34,079	31,435
Rocky Flats Plant	109,320	83,882	73,982
Sandia Laboratories	173,199	155,478	156,237
Savannah River Plant	96,680	108,985	107,186
University of California - Lawrence Livermore National Laboratory	66,657	64,548	76,084
All Other	127,467	72,615	79,191
Total, Atomic Energy Defense Activities	$ 1,309,936	$ 1,205,680	$ 1,171,559

Atomic Energy Defense Activities
Inventory Balances by Activity and Location
(Costs in Thousands)

	FY 1985 Actual Ending Balance	FY 1986 Estimated Ending Balance	FY 1987 Estimated Ending Balance
Weapons Activities			
Special Reactor Materials			
Albuquerque Operations Office	$ 45,842	$ 43,473	$ 42,781
Chicago Operations Office	111	111	111
San Francisco Operations Office	109	109	109
Schenectady Naval Reactors Office	4	4	4
Total, Special Reactor Materials	46,066	43,697	43,005
Other Special Materials			
Albuquerque Operations Office	12,919	16,629	20,437
Oak Ridge Operations Office	600	600	600
San Francisco Operations Office	1,666	1,666	1,666
Nevada Operations Office	58	58	58
Total, Other Special Materials	15,243	18,953	22,761
Special Process Spares			
Albuquerque Operations Office	880	880	880
Total, Special Process Spares	880	880	880
Common Use Stores			
Albuquerque Operations Office	52,248	57,522	64,160
Oak Ridge Operations Office	31,159	31,159	31,159
San Francisco Operations Office	21,694	22,694	23,694
Nevada Operations Office	9,864	9,864	10,865
Total, Common Use Stores	114,965	121,239	129,878
Total, Weapons Activities	$177,154	$184,769	$196,524

Atomic Energy Defense Activities
Inventory Balances by Activity and Location
(Costs in Thousands)

Materials Production	FY 1985 Actual Ending Balance	FY 1986 Estimated Ending Balance	FY 1987 Estimated Ending Balance
Common Use Stores			
Idaho Operations Office....................	$ 501	$ 501	$ 501
Oak Ridge Operations Office................	6,480	7,679	8,139
Richland Operations Office.................	3,515	3,880	3,890
Savannah River Operations Office...........	36,962	40,632	47,732
Total Common Use Stores..................	47,458	52,692	60,262
Special Process Spares			
Idaho Operations Office....................	3,772	4,702	5,562
Oak Ridge Operations Office................	72	77	77
Richland Operations Office.................	2,918	4,118	5,118
Savannah River Operations Office...........	23,356	26,496	30,096
Total Special Process Spares	30,118	35,393	40,853
Special Reactor Materials			
Albuquerque Operations Office..............	5	5	5
Chicago Operations Office..................	889	889	889
Idaho Operations Office....................	1	1	1
Oak Ridge Operations Office................	2,624	2,692	2,753
Richland Operations Office.................	20,538	22,163	21,206
San Francisco Operations Office............	130	130	130
Savannah River Operations Office...........	112,562	113,852	115,452
Total Special Reactor Materials..........	136,749	139,732	140,436
Other Special Materials			
Albuquerque Operations Office............	68	68	68
Idaho Operations Office..................	398	398	398
Oak Ridge Operations Office..............	5,102	7,222	7,129
Richland Operations Office...............	2	2	2
Savannah River Operations Office.........	1,539	1,539	1,539
Total Other Special Materials..........	7,109	9,229	9,136
Total Materials Production....................	$ 221,434	$ 237,046	$ 250,687

Atomic Energy Defense Activities
Inventory Balances by Activity and Location
(Cost in Thousands)

	FY 1985 Actual Ending Balance	FY 1986 Estimated Ending Balance	FY 1987 Estimated Ending Balance
Defense Waste and Byproducts Management			
Other Special Materials			
Idaho Operations Office..............	$ 150	$ 150	$ 150
Richland Operations Office...........	132	132	132
Total Other Special Materials......	282	282	282
Special Process Spares			
Idaho Operations Office..............	1,710	2,060	2,480
Richland Operations Office...........	4,672	5,911	5,577
Total Special Process Spares.......	6,382	7,971	8,057
Common Use Stores			
Idaho Operations Office..............	5,071	5,171	5,271
Richland Operations Office...........	12,209	10,983	11,323
Total Common Use Stores............	17,280	16,154	16,594
Total Defense Waste and Byproducts Management...........	$ 23,944	$ 24,407	$ 24,933

Atomic Energy Defense Activities
Inventory Balances by Activity and Location
(Costs in Thousands)

	FY 1985 Actual Ending Balance	FY 1986 Estimated Ending Balance	FY 1987 Estimated Ending Balance
Naval Reactors Development			
Special Reactor Materials			
Pittsburgh Naval Reactors Office	21,700	21,700	23,700
Schenectady Naval Reactors Office	500	700	900
Total Special Reactor Materials	22,200	22,400	24,600
Other Special Materials			
Pittsburgh Naval Reactors Office	0	100	100
Schenectady Naval Reactors Office	200	200	200
Total Other Special Materials	200	300	300
Fuel Fabrication			
Idaho Operations Office	14,123	13,596	13,646
Total Fuel Fabrication	14,123	13,596	13,646
Special Process Spares			
Idaho Operations Office	10,440	9,330	10,763
Pittsburgh Naval Reactors Office	13,700	13,600	15,300
Schenectady Naval Reactors Office	18,700	21,200	22,600
Total Special Process Spares	42,840	44,130	48,663
Common Use Stores			
Pittsburgh Naval Reactors Office	1,600	1,800	2,000
Schenectady Naval Reactors Office ...	1,600	1,700	1,700
Total Common Use Stores	3,200	3,500	3,700
TOTAL NAVAL REACTORS DEVELOPMENT	$82,563	$83,926	$90,909

INDIRECT EXPENSES

Mr. Bevill. Please provide a table showing indirect expenses for this appropriation by activity and location for FY 1985, FY 1986, and FY 1987. Please show the components that make up the indirect expense accounts.

Admiral Foley. I will be pleased to provide this information for the record.

(The information follows:)

NUCLEAR SAFEGUARDS AND SECURITY PROGRAM
INDIRECT EXPENSES
(Budget Authority in Thousands)

	Management and Administration	Protective Services	Plant Maintenance and Utilities
FY 1985			
Albuquerque	$5,863	$ 473	$3,120
Chicago	231	1,169	976
Oak Ridge	139	125	93
San Francisco	156	57	108
Nevada	256	0	0
Total	$6,645	$1,824	$4,297
FY 1986			
Albuquerque	$6,248	$ 504	$3,325
Chicago	179	1,207	946
Oak Ridge	142	129	99
San Francisco	156	57	108
Nevada	223	0	0
Total	$6,948	$1,897	$4,478
ADJUSTED FY 1986			
Albuquerque	$6,248	$ 504	$3,325
Chicago	179	1,207	946
Oak Ridge	142	129	99
San Francisco	156	57	108
Nevada	223	0	0
Total	$6,948	$1,897	$4,478
FY 1987			
Albuquerque	$6,560	$ 529	$3,491
Chicago	82	1,184	1,087
Oak Ridge	149	135	109
San Francisco	164	60	113
Nevada	261	0	0
Total	$7,216	$1,908	$4,800

SUMMARY OF INDIRECT EXPENSES BY CATEGORY WEAPONS RESEARCH, DEVELOPMENT, AND TESTING
(B/A $ in Thousands)

	Management and Administrative Services	Plant Maintenance and Utilities	Protective Services	Other (Taxes)	Total
FY 1985					
Los Alamos National Laboratory	$ 38,540	$ 35,380	$ 4,670	$ 0	$ 78,590
Lawrence Livermore National Laboratory	15,990	67,240	9,720	0	92,950
Sandia National Laboratories	31,250	40,630	13,510	9,900	95,290
Nevada Operations Office	19,930	12,830	3,020	350	36,130
Total	$105,710	$156,080	$30,920	$10,250	$302,960
FY 1986					
Los Alamos National Laboratory	$ 35,035	$ 32,175	$ 4,290	$ 0	$ 71,500
Lawrence Livermore National Laboratory	17,500	67,000	6,800	0	91,300
Sandia National Laboratories	31,829	43,241	13,404	11,402	99,876
Nevada Operations Office	20,271	12,359	2,988	628	36,246
Total	$104,635	$154,775	$27,482	$12,030	$298,922
FY 1987					
Los Alamos National Laboratory	$ 39,729	$ 36,486	$ 4,865	$ 0	$ 81,050
Lawrence Livermore National Laboratory	18,900	72,600	7,400	0	98,900
Sandia National Laboratories	33,662	45,031	14,009	14,082	106,784
Nevada Operations Office	19,778	13,804	3,684	674	37,940
Total	$112,069	$167,921	$29,958	$14,756	$324,704

SUMMARY OF INDIRECT EXPENSES BY CATEGORY
WEAPONS PRODUCTION AND SURVEILLANCE
(B/A $ in Thousands)

	Management and Administrative Services	Plant Maintenance and Utilities	Protective Services	Manufacturing Support	Total
FY 1985					
Albuquerque	$209,800	$179,400	$ 87,000	$207,900	$ 684,100
Oak Ridge	56,200	102,800	50,000	44,200	253,200
Savannah River	8,000	9,500	3,900	-	21,400
Total	$274,000	$291,700	$140,900	$252,100	$ 958,700
FY 1986					
Albuquerque	$214,000	$183,300	$ 91,600	$206,800	$ 695,700
Oak Ridge	61,300	103,000	58,200	45,700	268,200
Savannah River	8,100	10,000	3,900	-	22,000
Total	$283,400	$296,300	$153,700	$252,500	$ 985,900
FY 1987					
Albuquerque	$220,900	$192,000	$100,800	$212,000	$ 725,700
Oak Ridge	64,700	106,000	64,100	48,300	283,100
Savannah River	8,300	10,300	4,200	-	22,800
Total	$293,900	$308,300	$169,100	$260,300	$1,031,600

NUCLEAR MATERIALS PRODUCTION
INDIRECT EXPENSES
(B/A IN MILLIONS)

	Mgmt. & Admin. Services	Plant Maint. & Utilities	Protect. Services	Mftg. & Product Support	All Other	Total Indirect Expenses
FY 1985						
Albuquerque	$ 3.6	$ 0.9	$ 0.9	$ 4.5	$ 1.8	$ 11.7
Idaho	8.8	3.0	3.7	11.9	0.6	28.0
Oak Ridge	22.3	25.5	4.3	5.2	1.5	58.8
Richland	50.3	33.3	30.9	20.8	0.0	135.3
San Francisco	5.9	6.3	1.1	0.1	0.1	13.5
Savannah River	30.0	57.1	35.0	37.7	1.4	161.2
Total FY 1985	$ 120.9	$ 126.1	$ 75.9	$ 80.2	$ 5.4	$ 408.5
FY 1986						
Albuquerque	$ 4.0	$ 1.0	$ 1.0	$ 5.1	$ 2.0	$ 13.1
Idaho	9.2	3.1	3.8	12.5	0.7	29.3
Oak Ridge	30.0	29.5	4.8	5.8	1.6	71.7
Richland	52.3	34.3	30.4	20.8	0.0	137.8
San Francisco	5.9	6.2	1.1	0.0	0.1	13.3
Savannah River	30.6	64.1	36.5	39.2	2.9	173.3
Total FY 1986	$ 132.0	$ 138.2	$ 77.6	$ 83.4	$ 7.3	$ 438.5
FY 1987						
Albuquerque	$ 3.0	$ 0.8	$ 0.8	$ 3.8	$ 1.5	$ 9.9
Idaho	9.7	3.3	4.1	13.4	0.7	31.2
Oak Ridge	35.1	32.0	5.6	6.3	1.8	80.8
Richland	55.3	36.1	32.0	23.5	0.0	146.9
San Francisco	6.2	3.6	0.9	0.0	0.1	10.8
Savannah River	32.4	68.0	38.7	43.8	3.0	185.9
Total FY 1987	$ 141.7	$ 143.8	$ 82.1	$ 90.8	$ 7.1	$ 465.5

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT
INDIRECT EXPENSES
(B/A IN MILLIONS)

	Mgmt. & Admin. Services	Plant Maint. & Utilities	Protect. Services	Mftg. & Product Support	All Other	Total Indirect Expenses
FY 1985						
Albuquerque	$ 4.1	$ 1.0	$ 1.0	$ 5.0	$ 2.0	$ 13.1
Idaho	11.6	3.8	3.7	10.4	1.0	30.6
Oak Ridge	1.9	1.1	0.5	0.1	1.5	5.0
Richland	26.0	0.0	0.0	0.0	0.0	26.0
San Francisco	0.0	0.1	0.0	0.0	0.0	0.1
Savannah River	6.4	12.2	7.5	1.6	0.3	28.0
Total FY 1985	$ 50.0	$ 18.2	$ 12.7	$ 17.1	$ 4.8	$ 102.8
FY 1986						
Albuquerque	$ 3.7	$ 1.0	$ 1.0	$ 4.6	$ 1.8	$ 12.1
Idaho	10.6	3.6	3.6	10.3	0.9	29.0
Oak Ridge	2.0	1.3	0.5	0.1	1.7	5.6
Richland	28.1	0.0	0.0	0.0	0.0	28.1
San Francisco	0.1	0.0	0.0	0.0	0.0	0.1
Savannah River	6.6	13.7	7.8	2.0	0.6	30.7
Total FY 1986	$ 51.1	$ 19.6	$ 12.9	$ 17.0	$ 5.0	$ 105.6
FY 1987						
Albuquerque	$ 4.9	$ 1.2	$ 1.2	$ 6.1	$ 2.4	$ 15.8
Idaho	12.6	4.2	3.8	11.6	1.1	33.3
Oak Ridge	2.1	1.4	0.6	0.1	1.7	5.9
Richland	29.5	0.0	0.0	0.0	0.0	29.5
San Francisco	0.1	0.1	0.0	0.0	0.0	0.2
Savannah River	7.0	14.5	8.3	2.4	0.7	32.9
Total FY 1987	$ 56.2	$ 21.4	$ 13.9	$ 20.2	$ 5.9	$ 117.6

NAVAL REACTORS
INDIRECT EXPENSES
(BA THOUSANDS)

Locations	FY 1985	FY 1986	FY 1987
Bettis Atomic Power Laboratory	$22,600	$21,900	$22,100
Knolls Atomic Power Laboratory	25,500	26,200	26,500
Idaho Operations	8,400	9,100	9,700
TOTAL	$56,500	$57,200	$58,300

Components that make up the above expenses are:

1. Indirect labor (Controller, personnel, etc.)
2. Utilities
3. Communications
4. Equipment rental
5. Protective Services

Mr. Bevill. Please provide a table showing uncommitted obligations for this appropriation by activity and location for FY 1985, FY 1986, and FY 1987.

Admiral Foley. I will be pleased to provide this information for the record.

(The information follows:)

Weapons Activities Year-End Uncommitted Obligations
($ in Millions)

Location	FY 1985	FY 1986	FY 1987
Bendix Plant	$ 93.4	$ 83.8	$ 59.9
Mound Plant	39.7	28.6	17.5
Pantex Plant	30.0	15.4	9.4
Pinellas Plant	18.4	24.2	13.7
Rocky Flats Plant	28.6	80.5	48.1
Savannah River Plant	26.8	33.0	31.3
Y-12 Plant	79.2	58.4	48.1
Nevada Operations Office	39.7	23.9	26.0
Lawrence Livermore National Laboratory	31.2	24.1	34.7
Los Alamos National Laboratory	21.9	6.7	1.7
Sandia National Laboratories	17.7	0	0
Total	$426.6	$378.6	$290.4

NUCLEAR MATERIALS PRODUCTION
UNCOMMITTED OBLIGATIONS
(DOLLARS IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Albuquerque	$ 4.0	$ 1.2	$ 1.1
Idaho	45.9	18.0	14.0
Oak Ridge	7.4	6.5	6.5
Richland	2.7	3.0	3.0
San Francisco	0.0	0.0	0.0
Savannah River	48.4	15.5	18.5
Total Nuclear Materials Production	$ 108.4	$ 44.2	$ 43.1

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT
UNCOMMITTED OBLIGATIONS
(DOLLARS IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Albuquerque	$ 3.0	$ 1.7	$ 1.0
Idaho	7.9	3.0	3.0
Oak Ridge	1.3	0.0	0.0
Richland	2.7	3.0	3.0
Savannah River	43.4	2.0	2.2
Total Nuclear Materials Production	$ 58.3	$ 9.7	$ 9.2

INFLATION RATE

Mr. Bevill. What rate of inflation was assumed in this appropriation in FY 1985, FY 1986, and FY 1987? Please provide the details that form the composite.

Admiral Foley. The inflation information you requested is shown in a table which I would like to insert in the record.

(The information follows:)

Fiscal Year Appropriation	% Operating Escalation	% Equipment Escalation	% Composite Escalation
1985	5.0%	5.0%	5.0%
1986	5.0%	5.0%	5.0%
1987	4.6%	4.6%	4.6%

RESTORATION, REVITALIZATION, AND PREVENTION OF PLANT DETERIORATION

Mr. Bevill. Provide a table showing the amounts for restoration, revitalization, and prevention of plant deterioration for FY 1985, FY 1986, and FY 1987. In the latter category, include GPP, capital equipment, and operating expenses. Please provide this information by activity and location.

Admiral Foley. I would like to provide the following information for the record. (The information follows:)

Weapons Activities
Summary of Restoration, Revitalization, and Prevention of Plant Deterioration

($ in Thousands) a/

	FY 1984 Actual	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Research, Development, and Testing				
Lawrence Livermore National Laboratory (LLNL)				
Restoration	$ 15,500	$ 16,600	$ 17,500	$ 9,500
Revitalization	7,840	12,900	11,800	18,100
Prevention of Deterioration				
General Plant Projects	5,000	6,300	6,500	7,100
Basic Capital Equipment	19,090	21,650	15,733	18,000
Operating Expenses b/	43,083	54,407	58,422	61,343
Subtotal, LLNL	90,513	111,857	109,955	114,043
Los Alamos National Laboratory (LANL)				
Restoration	15,100	16,600	17,400	11,200
Revitalization	3,800	10,900	5,000	1,100
Prevention of Deterioration				
General Plant Projects	5,000	6,300	6,700	7,100
Basic Capital Equipment	16,867	20,880	15,561	23,850
Operating Expenses b/	56,466	61,610	66,529	69,855
Subtotal, LANL	97,233	116,290	111,190	113,105

Sandia National Laboratories (SNL)				
Restoration	15,600	16,700	17,800	9,500
Revitalization	0	6,900	13,200	13,700
Prevention of Deterioration				
General Plant Projects	5,000	6,400	6,600	7,100
Basic Capital Equipment	27,708	29,850	25,200	28,820
Operating Expenses b/	47,518	50,131	53,089	55,743
Subtotal, SNL	95,826	109,981	115,889	114,863
Nevada Operations Office (NVO)				
Restoration	19,400	19,200	14,300	7,600
Revitalization	17,500	26,600	17,900	40,000
Prevention of Deterioration				
General Plant Projects	7,100	7,500	7,700	7,700
Basic Capital Equipment	36,180	35,240	38,875	56,400
Operating Expenses b/	23,875	26,120	29,269	30,732
Subtotal, NVO	104,055	114,660	108,044	142,443
Total Research, Development, and Testing	$387,627	$452,788	$445,078	$484,443

---

a/ Unless otherwise noted, the sources for data are the FY 1985, FY 1986, and FY 1987 Congressional Budget Books.

b/ The sources of these data after FY 1983 is the MA-22 analysis of Maintenance as gathered from the FIS. The data shown in these columns is for the entire Weapons Program. It is not broken down to the OMA level.

Weapons Activities
Summary of Restoration, Revitalization, and Prevention of Plant Deterioration
($ in Thousands) a/

	FY 1984 Actual	FY 1985 Actual	FY 1986 Estimate	FY 1987 Estimate
Production and Surveillance				
Albuquerque Operations Office (ALO)				
Restoration	$ 47,500	$ 55,100	$ 25,500	$ 3,800
Prevention of Deterioration				
General Plant Projects	16,065	18,300	21,100	24,600
Basic Capital Equipment	59,525	65,695	80,800	90,750
Operating Expenses b/	96,526	108,602	117,628	123,509
Subtotal, ALO	219,616	247,697	245,028	242,659
Oak Ridge Operations Office (ORO)				
Restoration	68,500	37,800	59,800	75,300
Prevention of Deterioration				
General Plant Projects	6,935	8,800	7,600	7,400
Basic Capital Equipment	24,650	24,000	23,130	20,550
Operating Expenses b/	65,003	72,445	76,846	80,688
Subtotal, ORO	165,088	143,045	167,376	183,938
Savannah River Operations Office (SRO)				
Restoration	3,400	3,000	0	0
Prevention of Deterioration				
General Plant Projects	0	0	0	0
Basic Capital Equipment	7,000	3,600	2,120	2,800
Operating Expenses b/	155,896	166,916	179,292	188,257
Subtotal, SRO	166,296	173,516	181,412	191,057
Total, Production and Surveillance	$ 551,000	$ 564,258	$ 593,816	$ 617,654
Weapons Activities Summary				
Restoration	$ 185,000	$ 165,000	$ 152,300	$ 116,900
RD&T Revitalization	29,140	57,300	47,900	72,900
Prevention of Deterioration				
General Plant Projects	45,100	53,600	56,200	61,000
Basic Capital Equipment	191,020	200,915	201,419	241,170
Operating Expenses b/	488,367	540,231	581,075	610,127
Total, Weapons Activities	$ 938,627	$1,017,046	$1,038,894	$1,102,097

---

a/ Unless otherwise noted, the source for data are the FY 1985, FY 1986, and FY 1987 Congressional Budget Books.

b/ The source of these data after FY 1983 is the MA-22 analysis of Maintenance as gathered from the FIS. The data shown in these columns is for the entire Weapons Program. It is not broken down to the OMA level.

NUCLEAR MATERIALS PRODUCTION
PLANT MAINTENANCE
(DOLLARS IN MILLIONS)

	FY 1985	FY 1986	FY 1987
Restoration			
Idaho	$ 14.6	$ 18.6	$ 41.5
Oak Ridge	5.7	0.0	0.0
Richland	10.4	2.2	0.0
Savannah River	66.8	40.2	7.8
	$ 97.5	$ 61.0	$ 49.3
Productivity Retention			
Oak Ridge	$ 0.0	$ 6.6	$ 36.8
Richland	0.0	3.1	17.6
Savannah River	0.0	9.9	21.8
	$ 0.0	$ 19.6	$ 76.2
Prevention of Plant Deterioration			
Albuquerque	$ 5.5	$ 6.5	$ 3.9
Idaho	22.4	18.7	22.5
Oak Ridge	20.5	44.2	63.6
Richland	86.5	84.5	98.1
San Francisco	0.8	0.9	1.0
Savannah River	173.1	187.2	182.0
	$ 308.8	$ 342.0	$ 371.1

UNCOSTED OBLIGATIONS

Mr. Bevill. Please provide a table showing uncosted obligations as a percent of appropriations for FY 1985-FY 1987.

Admiral Foley. The percent of uncosted obligations for the Atomic Energy Defense Activities is reflected in a table which I would like to insert for the record.

(The information follows:)

Uncosted Obligations
Atomic Energy Defense Activities
(Dollars in Thousands)

	FY 1985	FY 1986	FY 1987
Appropriation....................	$ 7,325,421	$ 7,231,989	$ 8,230,000
Uncosted Obligations............	2,679,448	2,759,307	3,281,220
Percent of Appropriation.........	36.6%	38.2%	39.9%

INTERACTIVE GRAPHICS SYSTEMS

Mr. Bevill. Provide a listing of all funding for interactive graphics systems funded throughout the Defense Programs budget for FY 1985, FY 1986, and FY 1987. Show source of funds, i.e., construction, capital equipment, and operating by location.

Admiral Foley. I would be pleased to provide this information for the record.

FY 1986 CIM FUNDING ESTIMATES
($ in Millions)

	RESEARCH & DEVELOPMENT					PRODUCTION & SURVEILLANCE							
	LLNL	LANL	SNL	NV	TOTAL	BENDIX	PINELLAS	PANTEX	MOUND	ROCKY FLATS	OAK RIDGE	SAVANNAH RIVER	P&S TOTAL
OPERATING													
LEASES	0.0	0.2	0.4	0.0	0.6	5.5	0.2	1.1	0.1	1.1	0.7	0.0	8.7
OTHERS	2.3	6.0	6.9	0.0	15.2	10.5	4.2	1.9	1.0	5.8	17.1	0.4	40.7
SUBTOTAL OPER.	2.3	6.2	7.3	0.0	15.8	16.0	4.4	2.9	1.1	6.9	17.7	0.4	49.4
CAPITAL													
MIE	2.0	1.4	2.7	0.0	6.1	5.6	1.1	0.1	2.6	4.5	2.2	0.0	16.1
BASIC	0.8	1.5	3.3	0.0	5.6	3.1	0.7	0.4	1.7	2.4	4.0	1.0	13.3
SUBTOTAL CAP.	2.8	2.9	6.0	0.0	11.7	8.8	1.8	0.5	4.3	6.8	6.2	1.0	29.4
CONSTRUCTION													
IGS LINE ITEM	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.3	0.0	0.6	3.1	0.0	6.2
GPP	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	1.3	0.0	1.4
SUBTOTAL CONST.	0.0	0.0	0.1	0.0	0.1	0.0	1.3	1.3	0.0	0.6	4.3	0.0	7.5
OTHER *	0.1	0.0	0.1	0.0	0.2	4.3	3.7	0.7	0.8	8.0	4.5	0.0	21.9
TOTAL	5.2	9.1	13.4	0.0	27.7	29.1	11.1	5.4	6.2	22.3	32.7	1.4	108.2

*Includes funding for weapons system line items, restoration line items and CIM-related process development.

FY 1987 CIM FUNDING ESTIMATES

($ in Millions)

	RESEARCH & DEVELOPMENT					PRODUCTION & SURVEILLANCE							
	LLNL	LANL	SNL	NV	TOTAL	BENDIX	PINELLAS	PANTEX	MOUND	ROCKY FLATS	OAK RIDGE	SAVANNAH RIVER	P&S TOTAL
OPERATING													
LEASES	0.0	0.2	0.3	0.0	0.5	4.9	0.2	1.3	0.6	1.0	3.5	0.0	11.5
OTHER	2.7	7.0	8.6	0.0	18.3	10.4	4.5	2.9	1.4	8.1	20.8	0.0	48.1
SUBTOTAL OPER.	2.7	7.2	8.9	0.0	18.8	15.3	4.7	4.2	2.0	9.0	24.3	0.0	59.6
CAPITAL													
MIE	2.0	4.2	4.0	0.0	10.2	3.8	1.3	5.5	2.3	2.7	6.5	0.0	21.9
BASIC	0.6	2.0	6.0	0.0	8.6	4.1	1.3	0.5	0.0	4.0	5.7	1.5	17.2
SUBTOTAL CAP.	2.6	6.2	10.0	0.0	18.8	7.9	2.6	5.9	2.3	6.7	12.1	1.5	39.1
CONSTRUCTION													
IGS LINE ITEM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GPP	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.5	4.1	0.0	4.6
SUBTOTAL CONST.	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.5	4.1	0.0	4.6
OTHER *	0.1	0.0	0.7	0.0	0.8	4.4	3.7	0.1	2.9	0.0	3.3	0.0	14.5
TOTAL	5.4	13.4	19.7	0.0	38.5	27.6	11.0	10.3	7.2	16.2	43.9	1.5	117.8

*Includes funding for weapons system line items, restoration line items and CIM-related process development.

FY 1985 CIM FUNDING ESTIMATES

($ in Millions)

	RESEARCH & DEVELOPMENT					PRODUCTION & SURVEILLANCE							
	LLNL	LANL	SNL	NV	TOTAL	BENDIX	PINELLAS	PANTEX	MOUND	ROCKY FLATS	OAK RIDGE	SAVANNAH RIVER	P&S TOTAL
OPERATING													
LEASES	0.0	0.0	0.5	0.0	0.5	3.3	0.2	2.2	0.3	0.3	2.2	0.0	8.4
OTHER	2.0	4.0	5.2	0.0	11.2	5.0	3.4	0.8	0.7	1.9	8.8	0.2	20.8
SUBTOTAL OPER.	2.0	4.0	5.7	0.0	11.7	8.3	3.7	3.0	1.0	2.2	11.0	0.2	29.2
CAPITAL													
MIE	2.0	3.0	6.0	0.0	11.0	10.3	0.9	0.9	1.9	1.3	2.2	0.5	17.9
BASIC	0.5	1.0	1.1	0.0	2.6	2.4	1.8	0.6	1.4	1.8	6.2	0.5	14.5
SUBTOTAL CAP.	2.5	4.0	7.1	0.0	13.6	12.7	2.7	1.5	3.3	3.0	8.4	1.0	32.4
CONSTRUCTION													
IGS LINE ITEM	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.5	0.6	0.0	1.4	0.0	4.5
GPP	0.4	0.0	0.1	0.0	0.5	1.4	0.0	0.0	0.0	0.0	0.1	0.0	1.5
SUBTOTAL CONST.	0.4	0.0	0.1	0.0	0.5	1.4	1.0	1.5	0.6	0.0	1.5	0.0	5.9
OTHER *	0.8	0.0	0.1	0.0	0.9	5.0	1.5	0.7	1.3	2.6	1.7	0.0	12.8
TOTAL	5.7	8.0	13.0	0.0	26.7	27.3	8.8	6.6	6.1	7.8	22.6	1.2	80.4

*Includes funding for weapons system line items restoration linc items, and CIM-related process development.

NUCLEAR MATERIALS PRODUCTION
INTERACTIVE GRAPHICS SYSTEM
(DOLLARS IN THOUSANDS)

	Richland	Savannah SRP	Total
FY 1985			
Operating Expenses:			
Leases	$ 0	$ 42	$ 42
Other	0	0	0
Subtotal Operating Expenses	0	42	42
Capital Equipment:			
MIE	0	0	0
Basic	0	0	0
Subtotal Capital Equipment	0	0	0
Construction	0	0	0
Total FY 1985 Interaction Graphics	$ 0	$ 42	$ 42
FY 1986			
Operating Expenses:			
Leases	$ 0	$ 47	$ 47
Other	0	0	0
Subtotal Operating Expenses	0	47	47
Capital Equipment:			
MIE	915	1,100	2,015
Basic	0	0	0
Subtotal Capital Equipment	915	1,100	2,015
Construction	0	0	0
Total FY 1986 Interaction Graphics	$ 915	$ 1,147	$ 2,062
FY 1987			
Operating Expenses:			
Leases	$ 0	$ 0	$ 0
Other	0	0	0
Subtotal Operating Expenses	0	0	0
Capital Equipment:			
MIE	0	1,290	1,290
Basic	0	0	0
Subtotal Capital Equipment	0	1,290	1,290
Construction	0	0	0
Total FY 1987 Interaction Graphics	$ 0	$ 1,290	$ 1,290

DEFENSE WASTE AND BYPRODUCTS MANAGEMENT
INTERACTIVE GRAPHICS SYSTEM
(DOLLARS IN THOUSANDS)

	Richland	Idaho	Total
FY 1985			
Operating Expenses:			
Leases	$ 0	$ 0	$ 0
Other	0	0	0
Subtotal Operating Expenses	0	0	0
Capital Equipment:			
MIE	1,407	0	1,407
Basic	0	0	0
Subtotal Capital Equipment	1,407	0	1,407
Construction	0	0	0
Total FY 1985 Interaction Graphics	$ 1,407	$ 0	$ 1,407
FY 1986			
Operating Expenses:			
Leases	$ 0	$ 100	$ 100
Other	0	0	0
Subtotal Operating Expenses	0	100	100
Capital Equipment:			
MIE	966	0	966
Basic	0	0	0
Subtotal Capital Equipment	966	0	966
Construction	0	0	0
Total FY 1986 Interaction Graphics	$ 966	$ 100	$ 1,066
FY 1987			
Operating Expenses:			
Leases	$ 0	$ 2,870	$ 2,870
Other	0	0	0
Subtotal Operating Expenses	0	2,870	2,870
Capital Equipment:			
MIE	0	0	0
Basic	0	0	0
Subtotal Capital Equipment	0	0	0
Construction	0	0	0
Total FY 1987 Interaction Graphics	$ 0	$ 2,870	$ 2,870

ENVIRONMENT

Mr. Bevill. Please provide a table showing the funding for environmental safety and health activities for FY 1983 - FY 1987. Please provide this information by location.

Admiral Foley. I would be pleased to provide that information for the record (the information follows).

DEFENSE PROGRAMS
ENVIRONMENTAL SAFETY AND HEALTH
FUNDING BY LOCATION
(Dollars in Millions)

Location	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Albuquerque Operations Office	$ 80.60	$ 79.60	$ 94.08	$106.73	$131.28
Idaho Operations Office	25.02	28.01	10.57	10.94	11.01
Nevada Opeations Office	35.80	37.50	56.20	67.90	68.30
Oak Ridge Operations Office	34.70	39.57	98.76	105.18	105.31
Richland Operations Office	31.20	23.51	41.30	38.90	51.98
San Francisco Operations Office	23.20	23.80	24.30	34.70	35.70
Savannah River Operations Office	60.70	138.43	168.77	137.66	137.20
TOTAL DEFENSE PROGRAMS	$291.22	$370.42	$494.70	$502.01	$540.78

DEFENSE PROGRAMS STAFFING

Mr. Bevill. What is the staffing at each of the Defense Programs facilities for FY 1985, FY 1986, and FY 1987?

Admiral Foley. I would be pleased to provide that information for the record (the information follows).

DEFENSE PROGRAMS
STAFFING SUMMARY
FULL-TIME EQUIVALENTS BY LOCATION

Location	FY 1985	FY 1986	FY 1987
Albuquerque Operations Office	1262	1286	1392
Idaho Operations Office	119	116	116
Nevada Operations Office	247	245	250
Oak Ridge Operations Office	30	33	33
San Fransicso Operations Office	7	8	8
Savannah River Operations Office	284	300	311
Chicago Operations Office	44	49	49
Washington, D.C. (Headquarters)	431	452	461
TOTAL DEFENSE PROGRAMS	2424	2489	2620

STRATEGIC DEFENSE INITIATIVE

Mr. Bevill. Does this request imply that the FY 1986 DOD appropriation was excessive?

General Withers. No. In FY 1986 the Strategic Defense Initiative Office reevaluated and prioritized its program for FY 1986 based on the limited funding available. A major priority of the national program is to research the technical feasibility of nuclear directed energy weapons concepts that an adversary may develop. The feasibility of such concepts would impact large segments of the Strategic Defense Initiative Office program and a determination on feasibility is required as soon as possible. Because of the critical importance of this research to the overall Strategic Defense Initiative Office program, $62 million is being transferred to accelerate this research.

Mr. Bevill. What programs and what laboratories are expected to be funded?

General Withers. All of the weapons laboratories will receive funding from the appropriation transfer. Funding will be allocated to support all four major nuclear directed energy weapons concepts including the x-ray laser, hypervelocity pellets, electromagnetic concepts, and optical lasers as well as vulnerability and lethality studies.

Mr. Bevill. What is the effect on laboratory manpower of this supplemental request?

General Withers. Laboratory staffing will increase on the order of about 140 FTE's total for SNL, LLNL, and LANL. A number of personnel will be reassigned to strategic defense research within the laboratories.

Mr. Bevill. Provide a table showing the manpower requirements for the Strategic Defense Initiative for FY 1985, FY 1986, and FY 1987. Please provide this by laboratory.

General Withers. The estimated manpower requirements are provided in a table which I would like to insert in the record.

(The information follows:)

	FY 1985	FY 1986	FY 1986 Appropriation Transfer	FY 1987
Nuclear Directed Energy Weapons				
Los Alamos National Laboratory	210	195	55	610
Lawrence Livermore National Laboratory	400	425	45	725
Sandia National Laboratories	220	320	40	515
Total	830	940	140	1,850

STRATEGIC DEFENSE INITIATIVE

Mr. Bevill. Provide the funding for the Strategic Defense Initiative by location for FY 1985, FY 1986, and FY 1987.

General Withers. The estimates are provided in the following table:

(The information follows:)

Strategic Defense Initiative
(Dollars in Millions)

	FY 1985	FY 1986	FY 1986 Appropriation Transfer	FY 1987
Nuclear Directed Energy Weapons				
Lawrence Livermore National Laboratory	$ 66.1	$ 69.2	$ 40.0 a/	$139.8
Los Alamos National Laboratory	33.3	44.7	14.0	122.8
Sandia National Laboratories	29.5	41.8	8.0	98.9
Nevada Operations Office	86.1	114.2	0	174.5
Total	$215.0	$269.9	$ 62.0	$536.0

---

a/ Lawrence Livermore National Laboratory estimates $17 million will be provided to the Nevada Test Site in support of their program.

STRATEGIC DEFENSE INITIATIVE

Mr. Bevill. Provide the FY 1985, FY 1986, and FY 1987 funding for x-ray laser, hypervelocity pellets, high power electromagnetically-generated weapons, and optical frequency lasers. Provide this by location.

General Withers. The estimates are provided in a table which I would like to insert in the record.

(The information follows:)

Nuclear Directed Energy Weapons
Operating Expenses
(Dollars in Thousands)

DELETED

Mr. Bevill. What is the funding from within the testing program that is directed at the SDI program?

General Withers. In FY 1987 we estimate that about $226.7 million in test operating expenses will be related to strategic defense research. The overall weapons test budget estimate is $633.8 million.

CAPABILITIES OF UNITED STATES AND RUSSIAN NUCLEAR WEAPONS

Mr. Bevill. What can you tell us with regard to the relative capabilities of the US and USSR with regard to quality and quantity of nuclear weapons?

General Withers. The Department of Energy has consistently provided the highest quality nuclear weapons for each delivery system in meeting Defense Department requirements.

DELETED

The U.S. approach guarantees that our stockpile will improve in technology, safety, effectiveness, etc., by introducing new features.

DELETED

EXPLORATORY RESEARCH AND DEVELOPMENT

Mr. Bevill. What is included in the budget for the discretionary funding of the laboratory directors for FY 1985, FY 1986, and FY 1987? Please provide the source of funds for these discretionary accounts and the accomplishments to date. Please show this information by laboratory.

General Withers. No specific funding is earmarked in the budget for the laboratory directors' discretionary use. Within the laboratories' available resources, they have the flexibility to allocate funds to be used to conduct exploratory research and development. Los Alamos National Laboratory and Lawrence Livermore National Laboratory devote a small part of the Department of Energy funds, Sandia National Laboratories uses part of their reimbursable funds.

Exploratory R&D estimates are presented in the following table which I would like to insert into the record.

(The information follows:)

	FY 1985	FY 1986	FY 1987
Lawrence Livermore National Laboratory	$14.0	$15.5	$15.5
Los Alamos National Laboratory	15.7	16.7	17.6
Sandia National Laboratories	5.9	7.1	9.3

The goals of this program are to: work in the forefront of science and technology, conduct studies of new hypotheses, and develop of experimental devices, instruments, and components. These goals are being met by the program. Accomplishments include:

o Development of technologies to utilize synchrotron sources for x-ray calibration of plasma diagnostic instrumentation. Applications of this work have been made to weapons diagnostics at the Nevada Test Site and have been transferred to both the Universities of Wisconsin and California at Berkeley for improvements of their accelerator facilities.

- Sensor improvements which are potentially important for future smart weapons and the strategic defense initiative.
- Improvements to diamond turning machine technology development in support of precision engineering.
- Developed, in cooperation with The Polytechnic Institute of New York, three low density foams and gels for new material options.
- Investigated nuclear magnetic resonance imaging as a means of analyzing the structure of both liquids and solids.
- Pursued development of fiber optics systems to measure fluid properties in deep boreholes.
- Performed field test which gives promise of predicting a sites' susceptability to damage from ground motion.
- Constructed a two dimensional computational model to predict electronic device operation in adverse environments.
- Rewrote a leading international atmospheric modeling code, increasing its performance speed by 50 percent.

EXPLORATORY RESEARCH AND DEVELOPMENT FY 1985 EXPENDITURES

Mr. Bevill. Please provide a complete listing of expenditures from the discretionary account for FY 1985.

General Withers. The expenditures are presented in the following tables which I would like to insert into the record.

(The information follows:)

EXPLORATORY RESEARCH AND DEVELOPMENT PROGRAM
Lawrence Livermore National Laboratory
($ in Thousands)

Activity	FY 1985
Department (IR&D)	
Bio-Environmental	$ 98
Chemistry and Material Sciences	700
Computation	800
Earth Sciences	809
Engineering	894
Nuclear Chemistry	700
Physics	2,025
Subtotal	6,026
Director's Initiatives	
Bio-Environmental	602
Environmental Consequences (formerly Global Effects)	1,716
Institute for Geophysics and Planetary Research	706
Radiation Processing	-
Supercomputer Research	3,374
Subtotal	6,398
Lab-Wide Competitive Awards	1,569
Total Operating Expenses	$13,993

EXPLORATORY RESEARCH AND DEVELOPMENT PROGRAM
Los Alamos National Laboratory
($ in Thousands)

Activity	FY 1985
Information Processing	$ 182
Computer-Aided Engineering	779
Computer Technology	1,070
Theoretical and Computational Physics	1,434
Nuclear and Particle Physics	1,668
Material Sciences Condensed Matter	1,273
Chemistry	2,068
Atmospheric and Space Physics	327
Applied Projects Devices Techniques	2,717
Life Sciences and Biophysics	192
Theoretical and Applied Mechanics	1,174
Engineer Systems	2,608
National Security	208
Total Operations Expenses	$15,700

EXPLORATORY RESEARCH AND DEVELOPMENT PROGRAM
Sandia National Laboratories
($ in Thousands)

Activity	FY 1985
Development of artificial intelligence techniques for sensor-rich applications	$ 280
Processing of Materials with Lasers	111
Fluid-particle flows	196
Dynamic Metallization of Hydrogen	593
Transformation of toughened glass ceramics	169
Support of Imaging Sensor Development	607
Microelectronic Explosives Technology	355
Study of the mechanism of bonding in dynamically compacts powders	123
SiGe Strained-layer Superlattices	353
Complementary Strained-layer Superlattice Logic	223
FLUFF (SRD Project)	261
Solid-state Switching	210
Control of Vehicle Observable Signatures (SRD Project)	69
Metallic Glass Coatings	143
Development of Sensors with Integrated Transducers and Processors	295
Combination analysis of Energetic Materials using Laser Probes and Computer Simulations	608
Optical Signal Processing: Target Recognition	518
Demonstration of Laser Chemical Processing on CRM Products	292
Laser Plasma Soft X-ray Source	527
Total Operating Expenses	$ 5,933

EXPLORATORY RESEARCH AND DEVELOPMENT PROCEDURES.

Mr. Bevill. What are the procedures for establishing the limit for the account and approving the expenditures?

General Withers. Department of Energy Order 5000.1 states ". . .each R&D laboratory within the Department's laboratory system may. . .utilize a reasonable amount of operating funds for early exploration and exploitation of creative and innovative scientific and technological concepts arising in the course of the laboratory's work." The Order further states that cognizant secretarial officers have the responsibility to review and approve the level of exploratory research.

ESCALATION

Mr. Bevill. Please describe the difference in escalation requirements for RD&T and P&S.

General Withers. The rates of escalation assumed in the FY 1987 budget request are 4.9 percent for Research, Development, and Testing and 4.2 percent for Production and Surveillance. The slightly higher rate for Research, Development, and Testing reflects the higher costs to attract and retain highly skilled scientists and engineers at the laboratories, as well as the costs for acquiring unique, state-of-the-art equipment for the facilities.

WEAPONS TECHNOLOGY BASE FUNDING

Mr. Bevill. Within weapons technology base, provide the FY 1985, FY 1986, and FY 1987 funding for advanced concepts, supporting research, and supporting technology.

General Withers. The following table, which I would like to insert into the record, presents a breakout of the technology base effort.

(The information follows.)

WEAPONS TECHNOLOGY BASE
(B/O $ in Millions)

	FY 1985	FY 1986	FY 1987
Advanced Concepts	$233.0	$257.1	$427.3
Supporting Research	204.7	187.9	187.9
Supporting Technologies	259.7	240.8	244.0
Total	$697.4	$685.8	$859.2

WEAPONS DEVELOPMENT, ENGINEERING, AND CERTIFICATION

Mr. Bevill. What is the FY 1985, FY 1986, and FY 1987 funding for weapons development, engineering, and certification by location?

General Withers. The following table, which I would like to submit for the record, presents a breakout of the weapons development, engineering, and certification by location.

(The information follows.)

Weapons Development, Engineering, and Certification
(B/O $ in Millions)

	FY 1985	FY 1986	FY 1987
Los Alamos National Laboratory	$ 65.7	$ 89.6	$103.8
Lawrence Livermore National Laboratory	51.3	75.6	50.3
Sandia National Laboratories	235.4	251.4	280.8
Nevada Operations Office	45.7	25.8	28.4
Other	0	0	0
Total	$398.1	$442.4	$463.3

TESTING CAPABILITIES FUNDING

Mr. Bevill. Provide the FY 1985, FY 1986, and FY 1987 funding for testing capabilities by location.

General Withers. The following table, which I would like to submit for the record, presents a breakout of the testing capabilities by location.

(The information follows.)

Testing Capabilities
(B/O $ in Millions)

	FY 1985	FY 1986	FY 1987
Los Alamos National Laboratory	$ 21.5	$ 11.2	$ 13.3
Lawrence Livermore National Laboratory	10.2	8.0	13.5
Sandia National Laboratories	18.6	16.5	21.6
Nevada Operations Office	223.9	199.8	220.8
Total	$274.2	$235.5	$269.2

SPECIAL PROJECTS FUNDING

Mr. Bevill. Provide the FY 1985, FY 1986, and FY 1987 funding for special projects by location.

General Withers. The following table, which I would like to submit for the record, presents a breakout of the special projects by location.

(The information follows.)

Special Projects
(B/O $ in Millions)

	FY 1985	FY 1986	FY 1987
Los Alamos National Laboratory	$ 16.9	$ 12.9	$ 16.3
Lawrence Livermore National Laboratory	4.2	3.4	5.4
Sandia National Laboratories	13.7	15.4	16.4
Nevada Operations Office	16.0	18.3	20.2
Other	6.2	6.3	6.6
Total	$ 57.0	$ 56.3	$ 64.9

STRATEGIC DEFENSE INITIATIVE TESTS

Mr. Bevill. Describe how the tests are to be performed in FY 1987 and describe which aspects of the Strategic Defense Initiative program are supported by each test.

General Withers.

DELETE

DELETE

PRODUCTION WORKLOAD

Mr. Bevill. In terms of standard workload measurements, what is the percentage increase in production workload in FY 1987 over FY 1986?

General Withers. After incorporating the workload adjustments required to accommodate the Gramm-Rudman-Hollings budget reductions, there is a decrease in equivalent workload of about 5 percent in terms of new production, major modifications, and retrofits.

MARSHALL ISLANDS

Mr. Bevill. Please describe the activities being conducted for the Marshall Islands in FY 1986 and FY 1987.

General Withers. Current FY 1986 activities conducted under the auspices of DOE fall into four categories: medical, bioassay, environmental, and logistical support. The medical portion is designed to continue follow-up health care to the 174 members of the exposed population. This includes: (1) two annual ship-supported missions to Majuro, Ebeye, Uterick, and Mejato to examine and treat exposed and control populations and (2) maintenance of a resident physician, nurse and lab technician on Kwajalein for follow-up of the exposed population. The bioassay work is performed to verify dose predictions and to ensure that populations are within national and international radiation standards. This includes (1) whole body counting for the resettled Enewetak population and the Bikinians who resided on Bikini in the 1970's and (2) plutonium analysis of urine samples.

Environmental efforts focus on sampling the northern Marshalls environment, formulating dose assessments, and maintaining a radiological data base pertaining to the Marshalls. Included here are four ship-supported missions to Bikini to characterize the radiological conditions, to develop methods to reduce or block the uptake of radionuclides in the food chain, and to provide radiological advice relative to atoll resettlement. Lastly, the DOE, through its field operations and support contractor, provide logistical support to the Marshall Islands programs including procurement, transportation, equipment maintenance, chartering of the medical ship, and establishing field camps on Enewetak and Bikini. The environmental program and our logistics capability also supports the Bikini Atoll Rehabitation Committee.

FY 1987 activities are more difficult to predict since the DOE is assigned no direct responsibility in the Compact of Free Association legislation. However, we are prepared to continue activities for which we have the United States expertise--provided funding is made available by the Congress or on a reimbursable basis by another agency or the Government of the Marshall Islands.

COMPACT OF FREE ASSOCIATION

Mr. Bevill. When will the transition to the Compact of Free Association be complete?

General Withers. The Department of Energy is not the lead agency following the Compact implementation process; that responsibility rests with the Office for Micronesian Status Negotiations. However, we understand that the Compact will not be effective until: (1) review by the Government of the Marshall Islands of the impact on the Compact of the legislation, and (2) approval by the United Nations (UN) and termination of the current UN trusteeship. This process may not be completed until sometime this summer. Additionally, the Administration is currently drafting an Executive Order implementing the Compact requirements. DOE continues to work with other Federal agencies to determine the most effective means to carry out the Government's obligations, as expressed in the Compact and the implementing legislation.

WEAPON DELIVERY SCHEDULES

Mr. Bevill. Do the weapons delivery schedules included in the budget reflect the latest signed weapons stockpile memorandum?

General Withers.

DELETE

DELETE

DELETED

W82

Mr. Bevill. Describe the status of the production of the W82 155mm Artillery-Fired Atomic Projectile (AFAP).

General Withers. The W82 155mm AFAP is currently in the Development Engineering phase and, within two months, will enter into the production engineering phase. The program is proceeding on schedule. Milestones are expected to be met on time in support of the first production unit in/

DELETE followed by initial operational capability *DELETE*

W81

Mr. Bevill. Describe the status of the Department of Defense (DOD) and Department of Energy (DOE) development of the W81 Standard Missile 2 (SM-2).

General Withers. The Navy continues to hold to the requirement for an SM-2. The Department of Defense (DOD) funding for FY 1986 was $3 million,

DELETED

DOE will be gearing down to a minimum posture since the program has been in Phase 3 (development engineering) since 1977. Los Alamos is taking all personnel off the program for FY 1986. Sandia National Laboratories, Albuquerque, will be down to one engineer after

DELETED

ANTISUBMARINE WARFARE/STANDOFF WEAPON

Mr. Bevill. Describe the status of the Department of Defense's (DOD) and Department of Energy's (DOE) development of the Antisubmarine Warfare/Standoff Weapon.

General Withers. The Phase 2A Design Definition and Cost Study is being completed now. The Navy will make a presentation to the Defense Systems Acquisition Review Council (Milestone II) on April 17, 1986. Phase 3, Development Engineering, is expected to begin by August 1986.

Mr. Bevill. Have there been any delays in the DOD discussions on this system?

General Withers. The Navy received some Gramm-Rudman-Hollings cutbacks on the SEA LANCE project. *DELETE* The Navy's development of the nuclear payload version of SEA LANCE remains on schedule.

Mr. Bevill. What is the status of the authorizations and appropriations -- both DOE and DOD -- for this system?

General Withers. Both DOE and DOD funding for FY 1986 support the scheduled initial operational capability (IOC) *DELETE* DOE cuts in FY 1986 have resulted in some increase in development risk and have delayed some capital expenditures. Full funding of the DOE's FY 1987 request is needed to ensure that DOE's participation stays on track with the Navy and that capital facilities are constructed in time to support the IOC.

ANTISUBMARINE WARFARE NUCLEAR DEPTH/STRIKE BOMB

Mr. Bevill. Describe the status of the DOE and DOD development Antisubmarine Warfare Nuclear Depth/Strike Bomb.

General Withers. The Phase 2A Weapon Design Definition and Cost Study has just started on the Nuclear Depth/Strike Bomb (ND/SB). Two different designs are being competed against each other.

DELETE

DELETE

Mr. Bevill. Have there been any delays in the DOD discussions on this system?

General Withers. Since the ND/SB is a complete air-delivered bomb, the burden for development and production falls mainly to the DOE. The Navy primarily provides support for various types of system testing.

Mr. Bevill. What is the status of the authorization and appropriations -- both DOD and DOE -- for this system?

General Withers. No funds were requested for the ND/SB in FY 1986. No capital funds are being requested in FY 1987, since the weapon design has not yet been selected. It is expected that capital requirements will be relatively small since the ND/SB will be a follow-on design to DELETE DELETE The FY 1987 budget request calls for development funds for Los Alamos National Laboratory and Sandia National Laboratories, Albuquerque. The Navy has sufficient funding in FY 1986 and FY 1987 to support the early phases of development.

SMALL INTERCONTINENTAL BALLISTIC MISSILE

Mr. Bevill. Describe the status of the Department of Defense (DOD) and Department of Energy (DOE) development of the Small Intercontinental Ballistic Missile.

General Withers. The joint DOD/DOE warhead feasibility study (phase 2) will be completed this month (March 1986) and will be followed by a design definition and cost study (phase 2A), expected to begin in April 1986. The DOD has scheduled their Small Intercontinental Ballistic Missile, Defense Systems Acquisition Review Council II for late Calendar Year 1986, and their flight tests appear to be on schedule.

INERTIAL CONFINEMENT FUSION FUNDING

Mr. Bevill. Please describe the rationale for including the non-DOE laboratory funds in the FY 1987 budget for Inertial Confinement Fusion.

General Withers. In FY 1987, the ICF program activities budget at the three national weapons laboratories has been merged within the Weapons RD&T budget request line item. The purpose of this approach is to allow greater flexibility in managing resources to support weapons R&D, SDI initiatives, and ongoing ICF R&D.

In support of the ICF activities, KMS Fusion, University of Rochester, and Naval Research Laboratory focus on physics problems and certain aspects of technology development, such as diagnostics development and instability studies, which support larger-scale ICF efforts at the weapons laboratories; and they have provided a cadre of talent which has led to the intellectual enrichment of the national Inertial Confinement Fusion Program. We have requested separate funding for these laboratories because they do not have other sources of DOE R&D funding.

INERTIAL CONFINEMENT FUSION FACILITIES

Mr. Bevill. For each facility provide the technical justification for the project and the forecast results expected for each facility.

General Withers. The projections of facility use that appeared in data sheets submitted with the request for authorization of the three major facilities, and subsequent modifications, are as follows:

The 1975 data sheet for the SHIVA facility stated the justification for this facility was to demonstrate significant TN burn from target implosions.

The 1977 data sheet for the NOVA facility stated the purpose of this facility is to provide a high energy laser facility with characteristics adequate to provide full capability for carrying the laser fusion experimental program through a demonstration of scientific feasibility. In 1981, a decision was made to build only the 10-beam, 50-100 kJ NOVA and add the capability of operating at the second and third harmonics. The modified NOVA, according to the fiscal year 1982 submission, was "scheduled to achieve significant TN burn at high density by 1984, thus demonstrating target yield levels for weapons physics experiments." NOVA experiments have continued since April 1985, with the first ICF target experiments in January 1986.

The 1978 data sheet on the OMEGA facility stated the OMEGA National Laser Users Facility at the University of Rochester was built by the State of New York, the laser provided by ERDA/DOE, and the program supported in part by the University and industrial and utility sponsors. The purpose of U.S. Government participation was stated in the DOE FY 1979 Congressional Budget to be to "provide a unique opportunity to involve industry and universities in high energy laser fusion research activities, attain valuable information concerning the physics of the laser fusion process, and experience the cost advantages of a jointly funded project wherein several sectors pool their resources toward a common research objective."

The 1980 data sheet on the PBFA II facility stated the purpose of this project is to increase the power and energy of the Sandia Particle Beam Fusion Accelerator substantially and to provide a high average power technology laboratory. PBFA II provides for higher voltage acceleration of lithium ions in place of proton acceleration as currently used in PBFA I. PBFA II has the potential driver energy believed to be required for achieving ignition. Operation of PBFA II was initiated in December 1985, and about a year will be required to characterize the accelerator performance before it will be fully operational.

INERTIAL CONFINEMENT FUSION TECHNICAL OBJECTIVES

Mr. Bevill. For each facility, show how the technical objectives of the programs were achieved.

General Withers. The technical objectives and accomplishments for the major ICF facilities are contained in a table I would like to insert for the record.

(The information follows:)

INERTIAL CONFINEMENT FUSION FACILITIES
TECHNICAL OBJECTIVES AND ACCOMPLISHMENTS

	Facility	Objective	Accomplishments
o	NOVA High Energy Laser Facility, Livermore	Achieve target compression up to 1,000 x liquid density; target yield levels for weapons physics experiments; fusion physics experiments; fusion physics data base for weapons simulation development.	Construction of world's largest laser completed December 1984; laser/weapons physics experiments have continued since April 1985; demonstration experiments as world's foremost ICF experimental facility: Lab D-T implosion experiments in January 86 with record energy output.
o	Particle Beam Fusion Accelerator II, Sandia	Accelerator experiments leading to ignition.	Construction completed December 1985; facility characterization continuing through 1987.
o	OMEGA High Energy Laser ICF Experimental Facility Univ. of Rochester	Establish hydrodynamic & implosion physics data base on physics of optimally compressed ICF target; gain advantages of joint industry/university participation in National Laser Users Facility.	Extensive data base on ICF target physics; demonstrated routine, uniform, efficient third harmonic light generation target coupling; university and industrial user experiments on key physics issues; line radiation measurements for x-ray experiments (joint LLNL/LLE project). Joint ICF experiments with LANL; joint ICF diagnostics effort in LLNL; joint ISI assessment with NRL.

INERTIAL CONFINEMENT FUSION FUNDING

Mr. Bevill. What funding would be required at each location to adequately carry out the program as funded in FY 1986?

General Withers. The total program would need the FY 1986 funding level plus an allowance for inflation.

Mr. Bevill. Provide the funding for the Inertial Confinement Fusion program for FY 1985, FY 1986, and FY 1987. Provide this information by contractor and location.

General Withers. The FY 1985 and FY 1987 funding by contractor is shown in a table which I would like to insert in the record.

(The information follows:)

	($ millions)		
Contractor	FY 1985	FY 1986	FY 1987
Research, Development, and Testing			
Los Alamos National Laboratory	$ 41.5	$ 29.5	$ 21.5
Lawrence Livermore National Laboratory	68.2	62.8	36.0
Sandia National Laboratories	20.8	21.9	29.0
Others	0.8	1.2	0
Subtotal RD&T	$131.3	$115.4	$ 86.5
Inertial Fusion			
KMS Fusion	$ 13.0	$ 13.1	$ 12.0
University of Rochester	7.8	7.0	8.0
Naval Research Laboratory	2.7	2.5	2.5
Subtotal IF	23.5	22.6	22.5
TOTAL	$154.8	$138.0	$109.0

We do not know what the funding by location is as work is subcontracted, obtained on a reimbursable basis, or contracted out as procurements. The FY 1987 funding estimates are based on the assumption of adoption of the funding levels for Atomic Energy Defense Activities requested in the President's budget.

INERTIAL CONFINEMENT FUSION: ACHIEVEMENTS

Mr. Bevill. Describe the expected achievements of the ICF program in FY 1985, FY 1986, and FY 1987.

General Withers. A panel convened by the National Academy of Sciences has recently completed an exhaustive review of the Inertial Fusion program. We expect the committee's report, which will be made to the Congress, to include a review of the technical status and outlook of the program, including the support provided to nuclear weapons and strategic defense research. The accomplishments of the ICF program thus include significant advances in all three of these areas. The ANTARES laser facility was retired at the end of FY 1985 after completing a series of laser-target interaction, weapons physics, and SDI-related experiments. The only major experimental capability in the Inertial Fusion program in FY 1986 and FY 1987 is the NOVA laser, which will continue the ICF target physics, weapons physics, and SDI-related (principally x-ray laser) experiments initiated on NOVETTE in FY 1984-85. The PBFA II ion beam accelerator was completed in December 1985 and is now supporting experiments in beam focusing and switch and source technology demonstration that will continue into FY 1988.

INERTIAL CONFINEMENT FUSION *DELETE*

Mr. Bevill.

General Withers.

DELETE *DELETE*

DELETE

Mr. Bevill.

General Withers.

DELETE

SECURITY CLEARANCE APPROVAL

Mr. Bevill. Describe the number of days required for a typical security clearance approval. Provide the number of days for each phase, i.e., interviews, document preparation, document transmittals, investigations, administrative time lags, etc.

Admiral Foley. The system averages (noted in calendar days) are listed below for a typical Office of Personnel Management (OPM) background investigation in which there is no derogatory information (i.e., a "clear" case). Cases containing derogatory information may take longer in both the investigative phase as well as the adjudication phase due to further administrative actions that must be pursued (e.g., security interviews, psychiatric examinations, supplemental investigations, or the administrative review process).

PREINVESTIGATION PROCESSING

1.	DOE receives clearance request/forms, reviews forms for correctness, prepares file, and prepares package for transmission to OPM	8 days
2.	Mail time from DOE to OPM	14 days

Investigation Phase

3.	OPM receives DOE clearance request, reviews forms establishes file, and distributes investigation requirements to regional offices	7 days
4.	Mail time - OPM Headquarters to OPM regional offices	5 days
5.	OPM field investigator time	143 days
6.	Mail time - OPM regional office to OPM transcription center	5 days
7.	OPM transcription time	21 days

8.	Mail time - OPM transcription center to OPM Headquarters	5 days
9.	OPM quality control review of completed case	14 days
10.	Mail time - OPM to DOE	14 days
Post-Investigation Processing		
11.	DOE log-in, preparation of file, and adjudication time	10 days
12.	DOE prepares and sends notification to contractor	3 days
	TOTAL	249 days

TIME FOR SECURITY CLEARANCE

Mr. Bevill. Provide a description of how this time can be shortened. What steps to improve the time requirements have been made and what needs to be done?

Admiral Foley. The U.S. Office of Personnel Management (OPM) has taken a number of initiatives to reduce the interval associated with the investigation phase of clearance processing. These initiatives are specifically resource related (i.e., OPM has increased the number of investigative resources by a factor of at least "2" by temporarily augmenting its Federal investigator resources with contractor investigators) and have resulted in backlogged Department of Energy (DOE) cases being completed. OPM has advised us that their investigative phase interval should be reduced to a 75-90 calendar day turnaround time by mid-April 1986. OPM is also introducing an electronic mail system (estimated for implementation in January 1987, funds permitting) that should reduce the transmission time and transcription time in OPM cases by about 30 to 45 calendar days.

The DOE is also reviewing the personnel security program in order to reduce the numbers and levels of clearances and streamline the DOE administrative review process. This effort is expected to extend into November 1986.

RELATIONSHIP OF RESPONSIBILITIES

Mr. Bevill. Please describe the relationship of responsibilities the of the Safeguards and Security program to the responsibilities of the field locations with regard to safeguards and security.

Admiral Foley. The DOE operates under a decentralized management system for its safeguards and security program. Under this arrangement the Headquarters provides policy guidance and implementation oversight for field office operations with each field office providing onsite day-to-day management oversight of contractor operations.

THREAT STATEMENT

Mr. Bevill. Please describe the threat analysis that has caused the security programs to go from $185 million to over $700 million in 5 years.

Admiral Foley. In January 1983, the Department issued a revised threat policy statement. The statement identifies and characterizes a range of generic adversaries which could imperil national security and public health and safety.

DELETE

This guidance was designed to improve DOE capabilities to detect, identify, and inhibit unauthorized access to nuclear weapons, test devices, special nuclear materials, and other strategic materials and associated facilities. Specifically, for acts of theft or diversion of nuclear weapons or test devices,

DELETE

Utilizing the January 1983 threat policy statement as a baseline, a complete reassessment of our protection capabilities at each site was conducted. In addition, the Headquarters Inspection and Evaluation group began "performance-oriented" testing of our current protection systems also using the threat statement as a baseline. Both of these evaluations resulted

DELETE 2

in the identification The Department then developed site-specific upgrading plans which identified needed corrective actions, including cost estimates. Many of the corrective actions required a substantial increase in security force personnel and the institution of major construction projects. It is these two areas of improvement, in particular, that have cause the major increases in our safeguards and security budget.

It is important to note, Mr. Bevill, that we are currently assessing the adequacy of the 1983 guidance and anticipate that some

DELETE

Revisions to this threat policy document will also take into account the intelligence communities analyses of current perceived threats to major U.S. facilities and interests.

THREATS MADE SINCE 1982

Mr. Bevill. Have any DOE facilities experienced any threat in the last 5 years that approached the threat guidance now in effect?

Admiral Foley. No sir, we have not.

DELETE

DELETE

(The information follows:)

DELETE

DELETE

DELETE

DELETE

DELETE

HOW MUCH IS ENOUGH

Mr. Bevill. How does the Department ever reach the point where it considers itself safe enough?

Admiral Foley. The question of "how much is enough" for safeguards and security upgrades at critical Departmental facilities is an excellent question and one that we ask ourselves time and time again.

As you are aware, Mr. Bevill, during the past several years the Department has aggressively

DELETE

Shortly after Secretary Herrington was confirmed as Secretary of the Department of Energy, he created the Special Project Team (SPT) to address specifically these concerns; to assess the appropriateness, effectiveness, and management of DOE's safeguards and security program; and to recommend those actions needed to ensure that the appropriate level of protection is maintained in the weapons complex.

The SPT reviewed existing safeguerds, security policies, and security criteria; examined previous studies and reports; studied both the overt and covert threats to DOE's weapons facilities; visited the major facilities; and conducted extensive onsite reviews at the major field facilities and held hundreds of interviews with senior management, staff, and security force personnel throughout the DOE complex.

On August 30, 1985, the SPT submitted its report to the Secretary. Overall, the SPT found that physical safeguards and security systems at DOE's nuclear weapons facilities are satisfactory and continuing to improve; recent improvements in the system had reduced significantly or eliminated those vulnerabilities previously identified; and while every facility had not completed its physical security system improvements, any adversary who attempts to gain control over or steal a nuclear weapon, a critical weapon component, or special nuclear material would face a high probability of failure. The SPT also concluded that while the security posture in the Department has substantially improved DELETE

The SPT made 94 specific recommendations directed at improving the effectiveness and efficiency of nuclear safeguards and security. Many of these recommendations did not concern so much what had been done and was underway, but instead, the manner in which actions were taken or the length of time involved in completing specific tasks. Specifically, the SPT was concerned that major policy requirements were not current and that the Department had not developed or implemented an overall corporate strategy for program operations and management oversight.

On January 3, 1986, Under Secretary Salgado made perfectly clear the Department's commitment and support for "Operation Cerberus" -- the Secretary's Department-wide initiative to implement the recommendations of the SPT's report. Task force committees have been organized to work on each safeguards and security functional area, such as physical security, material control and accountability, personnel, threat information, research and development, and so forth. The completion date for this important project is November 1, 1986. We are now in the process of developing the programs necessary to implement these recommendations.

One of the recommendations of Operation Cerberus was to complete the development and implementation of Master Safeguards and Security Agreements (MSSA's) for DOE nuclear facilities. The concept for MSSA's was already in place, but the agreements were being developed strictly on a voluntary basis.

The MSSA is an agreement entered into between field office managers and Headquarters elements of the Department which prescribes protection of DOE assets, taking into account site/program-specific conditions, graded standards, and protection criteria; striking a balance between inherent risks, consequences, and incremental costs associated with additional protection measures. It permits a realistic approach to threats, risks, and loss consequences specifically associated with a facility in order to develop a reasonable protection strategy employing cost-effective protection measures. The MSSA promotes analysis of site-specific threats based on considerations and consequences which may be unique to a facility. It provides a means to document facts which directly influence the level of protection to be applied. This also helps eliminate misconceptions of risks resulting from a lack of facts or misinterpretation by individuals who are not knowledgeable in a particular area. The approved MSSA must state both the facts and philosophy which support a site-specific protection strategy for a facility. The philosophy should reflect logical reasoning based on the probable threats (i.e., number and motivation of the adversary), consequences, and the attractiveness of the item(s) or facility being protected. The protection strategy derived in this manner should stand as long as there is no change in

DELETE

We believe the MSSA's represent a major breakthrough in reaching decisions on "how much is enough" security and, under Operation Cerberus, we are aggressively pursuing the development of MSSA's as a requirement for each DOE nuclear facility.

Mr. Bevill, we are encouraged by the significant progress the Department has made, and continues to make, in its efforts to improve the safeguards and security posture at its critical facilities. With the dramatic improvement in our ability to mitigate the outsider threat, we have now

DELETE

DELETE

SECURITY INSPECTION EVALUATIONS

Mr. Bevill. What were the evaluation grades of the sites receiving a security inspection in the last year?

Mr. Foley. During the period March 1985 to March 1986, the Office of Security Evaluations, Defense Programs, conducted 11 inspections or reinspections of the Department of Energy operations offices. The inspection and evaluation process focuses on selected elements of a given protection program at an operations office. Each area is rated according to the degree that it meets the needs for which it is intended and according to the level of assurance it provides to meet those needs should they ever arise. I would like to provide the four possible ratings and their definitions for the record:

Unsatisfactory. - The protection element being evaluated does not meet minimum protection needs or would not provide adequate assurance that those protection needs would be met should they arise.

Marginally satisfactory. - The protection element being evaluated only partially meets minimum protection needs or provides questionable assurance that those protection needs would be met should they arise.

Satisfactory. - The protection element being evaluated meets minimum protection needs or provides plausible assurance that those protection needs would be met should they arise.

Superior. - The protection element being evaluated fully meets or exceeds all recognized protection needs or provides high assurance that those protection needs would be met should they arise.

DELETE

DELETE

DELETE

COORDINATION OF THREAT GUIDANCE

Mr. Bevill. To what extent is your assumed threat coordinated with other agencies of the Federal Government?

Admiral Foley. In developing the 1983 Threat Statement, the Department of Energy (DOE) thoroughly coordinated its efforts with technical experts of the Nuclear Regulatory Commission, the Federal Bureau of Investigation, and the Central Intelligence Agency. The views of the Department of Defense were also sought during the development of the Threat Statement. In addition to utilizing in-house and other government experts, the expertise of consultant firms, such as Rand Corporation, was also employed.

Recognizing that threat policy guidance is dynamic in nature, and as such, is influenced by daily events occurring throughout the world, there is continual interface between the Departments of Energy and Defense, the Nuclear Regulatory Commission, the Federal Bureau of Investigation, and other member organizations of the intelligence community for purposes of information exchange and the cross-fertilization of ideas and concepts on areas impacting the perceived threat to the operations and facilities of each entity.

Within the DOE, we have recently established an Office of Threat Assessment (OTA) to provide an infrastructure to develop, assess, and disseminate threat information. The OTA is a separate office from the Office of Safeguards and Security, placed under the Deputy Assistant Secretary for Intelligence, and is charged to support OSS needs and requirements and as such to serve as a fusion center to acquire, evaluate, process, analyze, and disseminate strategic, tactical and other forms of information necessary in characterizing malevolent acts and adversaries posing potential threats to DOE. OTA examines the capability, tactics, modes of operations, and activities of potential adversaries to DOE. The major tasks of OTA are to: (1) coordinate DOE information with other agencies; (2) maintain data bases; (3) provide finished analyses; (4) act as a clearing house for information, and (5) evaluate warning and alerts on all malevolent activities.

It is our belief that this new office will serve to significantly enhance the Department's focus on threats to DOE facilities and thereby improve our capabilities to effectively mitigate potential adversarial acts in a more timely and effective manner.

USAF ASSISTANCE TO NTS

Mr. Bevill. Why does your analysis of a threat at the Nevada Test Site assume that the adjoining U.S. Air Force Base would provide no assistance to DOE?

Admiral Foley. The nearest U.S. Air Force installation to the Nevada Test Site (NTS) is Nellis Air Force Base, which is located in Las Vegas, Nevada, and 60 miles from the nearest NTS boundary. Nellis AFB activities are primarily devoted to air operations, but they do have limited numbers of ground support personnel, primarily to provide protection to the Air Force Base and attendant equipment.

The Posse Comitatus Act prohibits the routine use of military personnel for the protection of a civilian site such as the NTS.

DELETE

However, if there were a protracted incident, then the current Memorandum of Understanding between the DOD and the FBI/Department of Justice would authorize their support with the joint approval of the Secretary of Defense and the Attorney General.

There is a small group of U.S. Air Force Personnel at Indian Springs, which is located 20 miles south and east of the nearest boundary of the NTS. Indian Springs is a very small installation specializing in tactical fighter aircraft operations.

The Air Force operations are factored into the overall NTS site planning; control of the restricted airspace at NTS is dependent upon Air Force radar surveillance.

USAF ASSISTANCE TO NTS

Mr. Bevill. Do you consider this to be realistic?

Admiral Foley. Yes, it is realistic, considering the following factors:

DELETE

DELETE

DEPARTMENT OF ENERGY SAFEGUARDS AND SECURITY CROSSCUT

Mr. Bevill. Please provide a crosscut analysis of all Safeguards and Security funding throughout the Department for FY 1985, FY 1986 and FY 1987.

Admiral Foley. I will provide that information for the record.

(The information follows:)

DEPARTMENT OF ENERGY
SAFEGUARDS AND SECURITY
FY 1985 - FY 1987 CROSSCUT BUDGET BY PROGRAM

(Dollars in Thousands)

	FY 1985 ACTUAL	FY 1986 ADJUSTED	FY 1987 REQUEST
Nuclear Energy Research and Development.......	22,824	21,390	24,844
Naval Reactors Development....................	14,926	17,895	18,604
Remedial Action and Waste Technology..........	132	134	141
Defense Waste and By-Products Management......	12,933	15,493	22,869
Magnetic Fusion...............................	1,801	1,937	1,989
Naval Petroleum and Oil Shale Reserves........	1,390	1,396	1,307
Uranium Enrichment Activities.................	36,092	35,527	41,253
Nuclear Waste Fund............................	1,075	1,243	1,268
Solar Energy..................................	158	188	175
Weapons Activities............................	341,819	373,062	389,420
Nuclear Safeguards and Security...............	56,239	53,344	62,595
Materials Production..........................	162,069	136,882	163,875
Security Investigations.......................	34,010	32,200	33,300
Environmental Research and Development........	582	782	737
High Energy Physics...........................	2,506	2,649	1,988
Basic Energy Sciences.........................	5,392	6,627	6,106
Multi-Program General Purpose Facilities......	1,100	0	0
Technical Information Management Program......	453	450	300
Strategic Petroleum Reserve...................	12,309	12,807	11,742
Management and Administration.................	2,131	2,240	2,224
Subtotal......................................	709,941	716,246	784,737
Other...	2,526	3,415	4,450
TOTAL...	712,467	719,661	789,187

DEPARTMENT OF ENERGY SAFEGUARDS AND SECURITY CROSSCUT

Mr. Bevill. Please provide the crosscut information by location.

Admiral Foley. I will provide that information for the record.

(The information follows:)

DEPARTMENT OF ENERGY
SAFEGUARDS AND SECURITY
FY 1985 - FY 1987 CROSSCUT BY FACILITY

(BA in Thousands)

ORGANIZATION/FACILITY	FY 1985 ACTUAL	FY 1986 ADJUSTED	FY 1987 REQUEST
ALBUQUERQUE OPERATIONS OFFICE			
Albuquerque Direct	47,902	47,295	60,744
Bendix	5,475	5,926	6,341
Los Alamos National Laboratory	55,207	55,255	43,499
Mound	13,613	14,503	16,725
Pantex	15,462	19,907	27,156
Pinellas	9,772	11,206	8,807
Rocky Flats	35,592	26,631	26,501
Sandia National Laboratory	48,598	48,300	42,285
Total Albuquerque	231,621	229,023	232,058
CHICAGO OPERATIONS OFFICE			
Chicago Direct	2,114	2,271	2,335
Ames National Laboratory	423	394	467
Argonne National Laboratory	12,595	11,024	12,231
Brookhaven National Laboratory	7,373	8,479	6,565
New Brunswick Laboratory	4,054	4,032	4,404
Solar Energy Research Institute	158	188	175
Total Chicago	26,717	26,388	26,177
IDAHO OPERATIONS OFFICE	20,601	22,653	25,668
NAVAL PETROLEUM	1,390	1,396	1,307
NEVADA OPERATIONS OFFICE	44,935	56,360	66,339
OAK RIDGE OPERATIONS OFFICE			
Oak Ridge National Laboratory	2,005	2,323	2,238
Oak Ridge Direct	95,422	98,471	126,333
Total Oak Ridge	97,427	100,794	128,571
PITTSBURGH NAVAL REACTORS	6,914	7,360	7,174
RICHLAND OPERATIONS OFFICE	54,626	50,037	48,529
SAN FRANCISCO OPERATIONS OFFICE			
Lawrence Livermore National Lab	51,461	60,225	50,408
SAVANNAH RIVER OPERATIONS OFFICE	111,412	92,731	126,372
SCHENECTADY NAVAL REACTORS	8,012	10,535	11,430
STRATEGIC PETROLEUM RESERVE OFFICE	12,309	12,807	11,742
HEADQUARTERS	45,042	49,352	53,412
TOTAL	712,467	719,661	789,187

SIZE OF DEPARTMENT OF ENERGY GUARD FORCES

Mr. Bevill. Please provide the number of guards employed at each location for years FY 1981-1987.

Admiral Foley. I will provide, for the record, information on the number of guards employed at each location for the years FY 1981 through FY 1987. I would like to point out that during last year's submittal we did not provide a breakdown of the number of guards employed at each location for FY 1981 due to the fact that centralized records were not maintained prior to FY 1982. We were, however, able to obtain the FY 1981 size of guard forces at each location during the past year, and I am now submitting this information for the record.

(The information follows:)

NUMBER OF PROTECTIVE FORCE PERSONNEL

FACILITIES	1981	1982	1983	1984	1985	1986	1987
Albuquerque Operations[1]							
Pantex Plant	194	214	214	246	267	345	409
Los Alamos National Laboratory	168	213	207	284	310	276	299
Mound Laboratory	62	60	72	93	162	121	115
Rocky Flats Plant	140	155	170	203	210	230	230
Sandia National Laboratory	105	158	176	179	152	162	161
Bendix	80	80	81	100	103	105	106
Pinellas	44	46	74	84	94	70	73
ALO (Feds)	13	13	13	13	12	12	12
TOTAL	806	939	1007	1202	1310	1321	1405
Chicago Operations							
Argonne National Laboratory - East	77	71	57	75	77	74	74
Argonne National Laboratory - West	17	17	27	41	41	45	45
Battelle-Columbus	32	15	34	34	34	34	36
Brookhaven National Laboratory	26	26	36	44	52	66	66
TOTAL	152	129	154	194	204	219	221
Idaho Operations							
Idaho National Engineering Laboratory	107	107	103	247	293	293	313
Nevada Operations							
Nevada Test Site and Las Vegas Sites	185	189	210	231	300	300	300
Tonopah	54	47	55	57	55	64	70
TOTAL	239	236	265	288	355	364	370

---

[1] Security responsibility for Tonopah has been transferred to Nevada Operations. Accordingly, all protective force data is now included under Nevada Operations, and all numbers for Albuquerque and Nevada have been adjusted.

NUMBER OF PROTECTIVE FORCE PERSONNEL

FACILITIES							
Oak Ridge Operations[2/]	1981	1982	1983	1984	1985	1986	1987
Portsmouth Gaseous Diffusion Plant	118	114	122	123	159	152	152
Oak Ridge Gaseous Diffusion Plant	85	80	68	77	84	59	59
Oak Ridge National Laboratory	68	65	60	64	73	71	70
Paducah Gaseous Diffusion Plant	47	44	44	49	56	57	57
Y-12	177	182	218	311	441	483	491
S&C (OR Federal Building)	*	*	*	*	40	43	45
Westinghouse (National Lead); Fernald, OH	*	*	*	*	52	57	57
Strategic Petroleum Reserve	130	144	175	221	236	257	251
TOTAL	625	629	687	845	1141	1179	1182
Pittsburgh Naval Reactors							
Naval Reactors Facility at Idaho							
Westinghouse-Bettis Atomic Power Laboratory		DELETE				DELETE	
**Shippingport							
TOTAL							
Richland Operations	270	291	291	380	380	409	417
San Francisco Operations							
Lawrence Livermore National Laboratory	159	195	180	207	197	197	197
Sandia National Laboratory (Livermore)	49	30	68	82	72	81	86
ESG (Energy Systems Group)	20	20	45	50	50	50	50
TOTAL	228	245	293	339	319	328	333

* Numbers unavailable for submittal.

2/ Oak Ridge Operations has security responsibility for the Strategic Petroleum Reserve (SPR). Accordingly all SPR data has been included under Oak Ridge Operations Office.

NUMBER OF PROTECTIVE FORCE PERSONNEL

FACILITIES	1981	1982	1983	1984	1985	1986	1987
Savannah River Operations	263	275	428	540	632	729	772
Schenectady Naval Reactors							
Knolls Atomic Power Laboratory						DELETE	
Windsor Site		DELETE					
TOTAL							
DOE Headquarters	180	182	169	141	148	148	148
TOTALS	3035	3197	3555	4356	4953	5185	5358

SAFEGUARDS AND SECURITY IMPLEMENTATION

Mr. Bevill. Considering the fact that the DOE safeguards and security budget is now in excess of $700 million, is there any office in DOE that specifically approves the safeguards and security implementation at each site? If not, why not?

Admiral Foley. Planning documentation for safeguards and security enhancements and future direction are prepared for each DOE site and are approved by the cognizant field office manager for submittal to DOE Headquarters. At the Headquarters level, these plans are reviewed and evaluated simultaneously by both the responsible program office and the Office of Safeguards and Security (OSS). The role of OSS in this process is to ensure that required corrective safeguards and security actions receive prompt attention and active support throughout the budget review and approval process to ensure that pressing safeguards and security projects are funded for actual implementation.

FY 1987 SHIFTING OF PROGRAM EMPHASIS

Mr. Bevill. Please indicate why the base program adjusted for inflation *DELETE* How much is available for this analysis in FY 1985, FY 1986, and FY 1987?

Admiral Foley. Over the past 4 years, the Nuclear Safeguards and Security (NSS) program has utilized operating expense prior-year balances to maintain the required level of effort. Prior-year balances will be fully utilized by the end of FY 1986. The FY 1987 request for the NSS program assumes no prior-year balances available; therefore, although the operating expense funding increase appears to be significant, in actuality the increase reflects only a 5% escalation. The remaining FY 1987 increase is required to sustain the progress and level of effort provided in FY 1986.

Areas uniquely oriented to addressing the insider threat in FY 1985 and FY 1986 total approximately $2.3 million each year. In FY 1987, these areas total approximately $3.3 million. Other areas of the program are to address integrated systems which cover both insider and outsider threats. These total approximately $27.7 million in FY 1985 and 1986, and approximately $27.8 million in FY 1987. However, as we have stated in our FY 1987 budget justification, safeguards and security operations reflects a shifting of priorities from a program of emphasis on large-scale hardening features and effective protection against outsider adversary intrusions to a program of emphasis on *DELETE* Emphasis in *DELETE* is on technology development and assistance for required improvements at DOE facilities to *DELETE* and demonstrate advanced integrated concepts at selected sites.

. Those facilities for which the combined threat, vulnerability, and consequences are potentially highest will be given highest priority. During FY 1987, projects are required to support significant improvements at virtually all DOE facilities with attractive special nuclear material.

DELETE *DELETE*

NEED FOR 100% INCREASE IN TRAVEL FUNDS

Mr. Bevill. Please explain the need to provide a 100% increase in travel funds for Federal employees in FY 1987.

Admiral Foley. The travel fund increase in FY 1987 is the result of the Office of Safeguards and Security's (OSS's) additional focal point responsibilities and expanded program management initiatives. For example, the office is working vigorously to ensure that Master Safeguards and Security Agreements (MSSA's) are put into effect as soon as possible. The MSSA is the major safeguards and security vehicle to assure that the DOE has a coherent, well planned, agreed upon concept for attaining a facilities-wide level of security. In order to do this, extensive travel is required for onsite review of the MSSA formulation and execution process. Also the increased attention to computer security reviews continues to draw heavily on travel funds. In addition, OSS staff - as part of their additional focal point responsibilities - must travel to most DOE operations offices to conduct systematic reviews of line-item safeguards and security construction projects, to ensure that safeguards and security considerations are addressed early on in line-item projects on a Department-wide basis.

RESEARCH AND DEVELOPMENT

Mr. Bevill. Considering the substantial investment in Safeguards and Security made by DOE over the last 3 years, what is the justification for now building a laboratory that will take years to construct?

Admiral Foley. The growing concern of threats to nuclear materials and facilities has focused national attention on the importance of nuclear safeguards and the urgency of improving the capability of safeguards systems througout DOE's nuclear facilities. The safeguards and security research and development program at the Los Alamos National Laboratory is responsible for developing, testing, and demonstrating advanced measurement and accounting systems at several DOE facilities now under construction (for example, the new Special Recovery Facility at Savannah River and the Gas Centrifuge Enrichment Plant at Portsmouth) as well as nearly all currently operating DOE facilities. With these anticipated new facilities, as well as increased emphasis on DELETE in existing DOE facilities, the need for such support is expected to continue in the foreseeable future.

DELETE

In addition, the safeguards training program, which is the principal means for rapid transfer of measurement and accounting technology to the nuclear community and is mandated by the Nuclear Nonproliferation Act of 1978, DELETE — Most courses require "hands-on" instrumentation laboratory training, which is accomplished by breaking the classes into small laboratory groups. To accommodate these groups, staff offices are temporarily converted to training laboratories, which is wasteful and inconvenient for the personnel involved.

Portions of the safeguards technology training program activities and other technology transfer functions must be in areas accessible to uncleared domestic, foreign, and International Atomic Energy Agency visitors. As many as 200 persons attend the training courses each year, and a comparable number of persons come at various times to learn about specific areas of safeguards technology. The new laboratory can help solve this problem while allowing protection of sensitive information in secure areas.

RESEARCH AND DEVELOPMENT

Mr. Bevill. Please indicate how the research and development conducted under the Nuclear Safeguards and Security programs is directly applicable to the deficiencies undercovered by your audits.

Admiral Foley. The scope of R&D is based on user-oriented needs identified through a number of sources. Efforts are prioritized to gain the most effective use of available resources, and to assure that the R&D activities are relevant to overall threat guidance, policy and objectives. Sources of needs include results of both Headquarters and field office audits, inspections, results of systematic vulnerability evaluations, and identified shortfalls in site safeguards and security plans and existing equipment or equipment. High priority is given to R&D projects that potentially have the maximum impact on cost-effective improvements, multiple uses, and reduction of outlay budgets for implementation.

DELETE DELETE

Ine characterization of threats and needed corrections provide the basis that is presently used for user-need requests from the field, budgetary planning, and cooperative efforts between DOE Headquarters and field facilities to ensure that we are developing prudent and reasonable improvements.

SECURITY INVESTIGATIONS

Mr. Bevill. What were the number of security investigations in FY 1985, 1986, and 1987? Why the need for the increase?

Admiral Foley. The number of security investigations for each fiscal year in question are as follows: 1) 26,456 were scheduled in FY 1985; 2) 29,222 are budgeted for in FY 1986; and 3) 30,764 are budgeted for in FY 1987. The increase in FY 1987 is due to increase clearance requirements in the Department's classified programs and an increase in the projected number of reinvestigations.

SECURITY INVESTIGATIONS

Mr. Bevill. Provide an analysis of security investigations programs showing the funds for defense and for other than defense programs.

Admiral Foley. In FY 1987, the funding estimates are as follows:

Defense Programs Activities	$24,833,000
Other than Defense Programs	8,467,000
	$33,300,000

SECURITY INVESTIGATIONS

Mr. Bevill. What is the average length of time required to complete an investigation for a contractor employee?

Admiral Foley. The average length of time for a background investigation (field investigation) to be completed on a Department of Energy contractor employee or applicant for employment, as of February 1986, was 214 calendar days. The average length of time for a National Agency and Credit Check (NACC) to be completed, as of February 1986, was 122 calendar days. Both investigations are conducted for the Department of Energy by the U.S. Office of Personnel Management.

SECURITY INVESTIGATIONS

Mr. Bevill. What is the average cost of an investigation?

Admiral Foley. In FY 1986 and FY 1987, the average costs of investigations are as follows:

FBI Background Investigation	$1,850
OPM Background Investigation	$1,625
OPM National Agency Check	$ 10

SECURITY INVESTIGATIONS

Mr. Bevill. What is the average cost to the Government for the time an employee must be restricted from productive work while an investigation is conducted?

Admiral Foley. Under Title 48, Federal Acquisition Regulation System, it is Department of Energy policy that no contractor is to place an individual in a position requiring a security clearance until the clearance has been granted unless an exception has been obtained from the head of the contracting activity. Exceptions are to be granted only when an individual is able to perform productive work in the assigned position. However, it is noted that for each 30 calendar day increment that the investigation exceeds 90 calendar days, the Department of Energy cost factor associated with the loss of potential productivity from a contractor employee is between $750 and $1,500.

SECURITY INVESTIGATIONS

Mr. Bevill. What is the cost and length of investigation by each agency performing investigations?

Admiral Foley. As of February 1986, the average length of time for investigations was as follows:

Federal Bureau of Investigation background investigations	- 97 days*
Office of Personnel Management background investigations	- 214 days*
Office of Personnel Management national agency checks	- 122 days*

The cost per case for each type of investigation is listed below:

	Average Cost Per Case		
	FY 1985	FY 1986	FY 1987
Federal Bureau of Inves.	$ 1,709	$ 1,850	$ 1,850
Office of Pers. Mgmt.	1,625	1,625	1,625
National Agency Checks	9	10	10

* Calendar days

SHUTTLE DISASTER

Mr. Bevill. Please describe the impact of the recent disaster at the NASA program on the DOE verification and control program.

Admiral Foley. The Challenger disaster is not expected to have a significant effect on DOE's satellite instrumentation program. Instrumentation payloads are delivered by DOE to Air Force prime contractors for integration and testing on the space vehicle, normally 18 to 24 months before scheduled launch. Schedules for delivery are established by the contractors through the Air Force program office based on projected launch dates. Consequently, any effect on DOE will depend largely upon how long the shuttle program has to stand down, and whatever action, if any, the USAF may choose to take regarding satellite production rates if shuttle launches are delayed for an extended period.

INFLATION ALLOWANCE

Mr. Bevill. Please describe why there is no need for an allowance for inflation in the verification and control program.

Admiral Foley. A five percent allowance for inflation is included in the Verification and Control Technology (V&CT) program in FY 1987 budget request. This allowance, however, is not specifically identified as such in the summary table of changes, but is included in the major programmatic areas. Thus, the proposed changes from the FY 1986 adjusted appropriation represent a mixture of the five percent inflation allowance and program increases or decreases. For example, it should be noted that the five percent inflation allowance has an impact on the verification detection technology development activities. These activities, comprising about *DELETE* $102 million request, utilize high-technology items which are currently subjected to an inflation rate ranging from 12 to 14 percent. The five percent allowance included in the FY 1987 request does not totally cover inflation at that level and results in a overall modest contraction of the V&CT program.

VERIFICATION AND CONTROL TECHNOLOGY FUNDING

Mr. Bevill. Please provide the funding for the various functions under Verification and Control.

Admiral Foley. The fiscal year 1987 budget request for verification and control technology is $101.7 million. The breakdown of the manner in which the $101.7 million is requested by function is shown on this chart, a copy of which I would like to insert in the record.

(The information follows:)

DELETE

DELETE

INTELLIGENCE COORDINATION

Mr. Bevill. Please describe the coordination role of the office with regard to all intelligence gathering capabilities of the Department.

Admiral Foley. The Department of Energy has no independent role in the collection of foreign intelligence. That activity is performed by other members of the Intelligence Community. My office does coordinate the

DELETE

VERIFICATION AND CONTROL TECHNOLOGY PERSONNEL

Mr. Bevill. How many people are employed in this function in FY 1984, FY 1985, FY 1986, and FY 1987?

Admiral Foley. The Verification and Control Technology program is managed by the Office of International Security Affairs under the Deputy Assistant Secretary for Security Affairs and by the Deputy Assistant Secretary for Intelligence. The personnel strengths for FY 1984 through FY 1987 are *DELETE*

DELETE

INTELLIGENCE ANALYSIS

Mr. Bevill. Please describe the relationship of the analysis of nuclear terrorism intelligence performed in safeguards and security.

Admiral Foley. Nuclear terrorism intelligence analysis conducted within the Office of Deputy Assistant Secretary for Intelligence supports security policies and procedures developed and instituted by the Office of Safeguards and Security to protect DOE installations, activities, property, information, and employees.

DELETE

This analysis in turn is considered in determining the overall potential thre from terrorists and managing the risk to DOE facilities.

DELETE

DETECTION SYSTEMS DEVELOPMENT

Mr. Bevill. Please describe the improvements in detection activities and the need to replace outdated systems.

Admiral Foley. The detection technology development activity in the Verification and Control Technology (V&CT) program is an ongoing effort to develop, update, and maintain state-of-the-art technology in the arms control and treaty verification arenas. Further, by the pursuit of advanced technical concepts, we try to anticipate future requirements in order to be time and subject responsive to arms control, verification, and intelligence-related needs.

There are several examples of improvements in detection capabilities and replacement of outdated systems evidenced in this program. First, nearly a decade ago, DOE developed the equipment for onsite inspection provisions under the Peaceful Nuclear Explosions Treaty (PNET) protocol. To a large measure, this equipment is no longer supportable. Modernization is currently underway to incorporate logistically supportable and reliable state-of-the-art technology into an improved Local Seismic Network, packaging

DELETE

Second, DOE's Regional Seismic Test Network (RSTN) began full operation in 1982 based on late 1970's technology for the National Seismic Stations.

DELETE *DELETE*

DELETE

Also. advanced concepts are being applied to detection activities.

DELETE

DELETE

SATELLITE SENSOR DELIVERIES

Mr. Bevill. How many satellite-borne sensors were delivered in FY 1985 and planned for FY 1986 and FY 1987?

Admiral Foley. The Department delivered DELETE satellite payloads in FY 1985. Present plans are for DELETE deliveries in FY 1986 and DELETE 1987.

NUCLEAR STANDARD MISSILE

Mr. Bevill. With regard to the W81 standard missile, to what extent has DOD restructured their requirement?

Dr. Wagner. The requirement for SM-2(N) (W81) is not changed. Nuclear SM-2 is designed to defend the fleet against the threat posed by *DELETE*

survivability

DELETE

NUCLEAR STANDARD MISSILE

Mr. Bevill. What is the status of the DOD development?

Dr. Wagner. The DOD's SM-2(N) program is in full scale engineering development. THE DOD program develops the EX-62 target detecting device (TDD) (fuze) for the Department of Energy's W81 nuclear warhead, as well as combat system integration. In 1986, engineering prototypes of the EX-62 TDD will be delivered, and the preparations for Navy technical evaluation will resume. Combat system integration with the AEGIS/Vertical Launch System will continue.

NUCLEAR STANDARD MISSILE

Mr. Bevill. Has the IOC date for the W81 Standard Missile been revised since FY 1984? Please describe each change.

Dr. Wagner. Following the May 1984 DOD budget revision, the IOC of the W81 Standard Missile-2 (Nuclear) (SM-2(N)) was changed to *DELETE* This was due to lack of FY 1985 funding and was contingent upon a funding profile which included $9.7 million in FY 1986 and $23.9 million in FY 1987. There was $0.5 million in FY 1984 funds and $1.5 million in FY 1985 funds reprogrammed to avoid termination of contracts and to maintain a cadre of key personnel. The appropriate amount of $3.0 million in FY 1986 (less than one-third of the requested amount) necessitated a further program restructuring to provide an executable funding profile. This required reducing the FY 1987 request from $23.9 million to $9.2 million and further reducing the planned FY 1988 amount from $23.7 million to $15.0 million, and caused total program cost to grow due to program stretchout. At the time the FY 1987 budget was submitted, we projected that the delay in the development program would cause at least a one and one-half year delay in IOC, to the *DELETE* but in fact this restructuring has required that the IOC

DELETE

STATUS OF NUCLEAR DEPTH CHARGE

Mr. Bevill. What is the status of DOD and DOE development of the new airlaunched nuclear depth charge?

Mr. Foley. A Phase 2A effort has just begun for this system. We are presently examining two designs: a derivative of the antisubmarine warfare/standoff weapon and a derivative of the B61 bomb.

DEFENSE PROGRAMS PROJECT TO REDUCE DOE UTILITY COST

Mr. Bevill. We understand a power line from Lawrence Livermore National Laboratory, (LLNL) to Western Area Power Administration would reduce DOE's utility costs. What is the status and potential benefit of that project?

Admiral Foley. That project estimated at $18.9 million, has been approved within the Department, but deferred until FY 1988. It is possible that the line could pay for itself within one year. Cost savings to DOE will come from two sources: avoidance of transmission and other fees associated with power the Department already has and from savings realized by purchasing additional low-cost power from sources obtainable with the line. Further, the line will provide more flexibility to DOE to optimize the allocation of low-cost power to all three Bay Area labs - Standford Linear Accelerator Center, Lawrence Berkely Laboratory, and LLNL. This flexibility increases the overall benefit to the Department.

Between 1990, the proposed in-service date of the line, and 2001, estimated savings to DOE range between $40 million and about $300 million, depending on how the Department uses its present allocations of low-cost lower and what new sources of available low-cost power it secures.

Another benefit, of particular concern to Defense Programs in DOE, is increased security and reliability of power supply. A second line provides two alternate power sources to the lab, resulting in minimal programmatic impact of a single point failure. It also avoids continuity and sufficiency of supply problem due to transmission limitations experience in the past and anticipated in the future.

REPROGRAMMINGS

Mr. Bevill. Please provide a list of all reprogrammings that are included in the Department's budget for all programs under the jurisdiction of the Energy and Water Development Subcommittee.

Ms. Hesse. I would like to provide that information for the record.

(The information follows:)

Reprogrammings/Notifications
Referenced In The
FY 1987 Budget Justifications
(Dollars in Thousands)

	FY 1986		
	Present	Change	Revised
Technical Information Management Program (TIMP)			
(Energy Supply R&D)			
In-House Energy Management.....	$ 12,734	$ -7,923	$ 4,811
TIMP..........................	10,000	+7,923	17,923*

*Of this amount $3,923,000 will be deferred until FY 1987.

This reprogramming will offset funding shortfalls in both FY 1986 and FY 1987 for the TIMP. The primary goals of the TIMP are (1) to ensure cost effective and efficient management, control, and accountability of DOE funded research results, and (2) to obtain worldwide energy R&D results for use by DOE and U.S. scientists, engineers, and program managers. As a part of the overall Departmental program, TIMP is responsible for the management, control, and dissemination of classified and sensitive materials produced in its DOE R&D programs.

	Present	Change	Revised
Baseline Environmental Survey			
(General Science & Research)			
High Energy Physics			
Facility Operations (OE)...........	$ 175,295	$ -200	$ 175,095
Nuclear Physics			
Medium Energy Physics (OE)..........	73,191	-60	73,131
Heavy Ion Physics (OE)..............	50,190	-40	50,150
Subtotal, General Science.......	$ 298,676	$ -300	$ 298,376
(Uranium Enrichment Activities)			
Gaseous Diffusion (OE)................	$1,043,313	$ -250	$1,043,063
Weapons Activities			
Production & Surveillance (OE)......	$1,743,589	$-3,800	$1,739,789
Materials Production			
Reactor Operations (OE).............	542,615	-1,517	541,098
Defense Waste			
Interim Waste Operations (OE).......	262,521	-300	262,221
Subtotal, Atomic Energy Defense...	$2,548,745	$-5,617	$2,543,108
(Energy Supply R&D)			
Environment, Safety, and Health.......	$ 37,338	$+7,617	$ 44,955

This program involves a baseline environmental survey of approximately 40 DOE sites. These sites have an estimated total of 600 inactive waste areas, 300 hazardous waste management areas, 1,800 air emission stacks, and 400 wastewater outfall pipes. The survey will cover air, water, and soil, and all areas of environmental regulation. The survey will begin in FY 1986 with 5 sites, an additional 20 in FY 1987, and the remainder in FY 1988.

	1986		
	Present	Change	Revised
Uranium Enrichment			
AVLIS R&D - Oak Ridge National Lab - Continuing Program	17,300	-17,300	-0-
AVLIS R&D - Oak Ridge National Lab - Phase Out Program	-0-	+17,300	17,300 [a]

The AVLIS R&D at Oak Ridge National Lab, centered principally around operation of the Materials Handling Development Module (MHDM), is being phased out in FY 1986 and the residual R&D, along with approximately 30-40 personnel, will be transferred to Lawrence Livermore National Lab. The work will be consolidated with LLNL activities in preparation for the transfer to the private sector during the FY 1988-89 period. The MHDM will be decontaminated and decommissioned with FY 1986 funds.

[a] This is the total amount of funding at OR for this program however, the facility will be operated for a part of the year and the specific amount for D&D and phase out has not yet been determined.

FY 1987 Changes

Oak Ridge Disposal Activities Funding Changes	FY 1987		
	Present	Change	Revised
86-D-173 Central Waste Disposal Facility, OR	$ 949*	$ -949	$ 0
Interim Waste Operations, Operating Expenses	324,730	+949	325,679

The changes reflect the Department's plan to terminate the use of hydrofracture to dispose of liquid low-level waste at Oak Ridge, Tennessee. The termination of hydrofracture is in response to recently revised regulations by the state of Tennessee. In addition, the Department plans to redirect other FY 1986 low-level waste disposal operating expense funded activities within the Interim Waste Operations subprogram in an effort to identify and implement technically and environmentally acceptable low-level waste disposal options at Oak Ridge (refer to volume I, pages 555, 556, 569 and 572 of the FY 1987 Budget Request).

Richland Tank Farm	Present	Change	Revised
82-N-104 Waste Transfer Facilities, RL	$ 67*	$ -67	$ 0
82-N-107 Rail Replacement, RL	550*	-550	0
83-D-157 Additional Radioactive Storage Tanks, RL	583*	-583	0
87-D-174 241-AQ Tank Farm, RL	2,100	+1,200	3,300

The prior year projects were completed under cost. These adjustments are necessary to provide adequate first year funding to maintain the required schedule for design and construction of four high level waste storage tanks. These new tanks, which have a TEC of $58 million, will be completed in the early 1990's (refer to Volume I, pages 569, 571).

Richland Central Warehouse Upgrade	Present	Change	Revised
83-D-157 Additional Radioactive Waste Storage Tanks, RL	$ 4,200*	$ -4,200	$ 0
85-D-158 Central Warehouse Upgrade, RL	1,300	+4,200	5,500

This project provides for a new warehouse at Richland to replace a dilapidated, thirty-year old structure. The use of underrun funds for this $13 million project will restore its funding, which was reduced by budget constraints, to cover planned costs for FY 1987 (refer to Volume I, pages 569, 573).

---

*Unobligated balances beginning FY 1987.

TESTING BALANCE

Mr. Myers. What part of your testing budget is devoted to monitoring and maintaining the existing stockpile? What part is research on new weapons?

Admiral Foley.

DELETE *DELETE*

STRATEGIC DEFENSE INITIATIVE

Mr. Myers. If we can transfer the $62 million that you requested for Department of Defense to DOE for SDI research in 1986, can we expect to fund more of the defense programs of DOE out of the Defense Subcommittee? Could the entire defense program become a Defense Department reimbursable?

Admiral Foley. Additional transfers of funds are not anticipated at this time. It would not be possible for all of the DOE defense programs to be funded from reimbursable work because of the unique statutory mission of DOE and the appropriations law established by Congress. It is for precisely these reasons that an appropriation transfer was necessary.

U.S. AND SOVIET WARHEAD TECHNOLOGIES

Mr. Fazio. Would you say that the U.S. is ahead of the Soviet Union in nuclear warhead technologies, behind the Soviets, or that the two sides are about equal?

Admiral Foley.

DELETE

Mr. Fazio.

DELETE

Admiral Foley.

DELETE

NEW NUCLEAR WARHEADS

Mr. Fazio. What is the justification for the Corps Deep Attack Concept, mentioned in the Department's FY87 budget request?

Admiral Foley.

DELETE

DELETE

Mr. Fazio. What is the justification for Hard Target Kill Weapon mentioned in the Department's FY 1987 budget request?

Admiral Foley. Study of this system has been requested by the Department of Defense. The Department of Energy is currently engaged in a joint Department of Defense/Department of Energy Phase 1 Feasibility Study for this concept. The Air Force forwarded this request to the Department of Energy through the Military Liaison Committee. The Department of Defense would be the best source to justify the need for this program.

ATOMIC DEMOLITION MUNITIONS

Mr. Fazio. I have seen no mention of the Small Atomic Demolition Munition (SADM) in the FY 1987 Department of Energy budget request. Is it the Department's intention to terminate research and development funding for this program at the end of the current fiscal year?

Admiral Foley. It was anticipated that the Department of Energy would receive a joint Department of Defense/Department of Energy Phase 1 Concept Definition Study request from the Army for a new atomic demolition munition in FY 1986. Indeed, we did receive the request in FY 1986 but shortly thereafter the Army cancelled their request and indicated no future interest in developing a new atomic demolition munition. Consequently, no research and development money was spent in FY 1986 and it will be excluded from future DOE requirements unless requested by DOD.

RELIABILITY TESTING

Mr. Fazio. In testimony before the HASC last fall, Lawrence Livermore National Laboratory Director Roger Batzel stated that nuclear weapons designed by the laboratory "were designed under the assumption that nuclear testing would continue, so that if any problem ever arose in the stockpile, a nuclear test could be performed to help certify that the weapon would continue to work as it was designed to."

In the printed version of the hearing record, this statement was "clarified" with a supplemental submission, declaring that while warheads were designed under the assumption that testing would continue "they were designed to be as conservative as possible within the constraints of meeting the military requirements to hedge against the possibility of a CTBT." Does this mean that these warheads were designed so that the United States could have adequate confidence that a weapon would continue to perform the military missions for which it was designed without explosive proof testing? If not, what purpose was the "conservatism" of the warhead designs intended to serve?

Admiral Foley. There are many factors considered in the design of our weapon systems. Of primary importance is that they satisfy the military characteristics specified by the Defense Department with regard to yield, yield options, safety, use control, ability to perform reliably and predictably under all conditions of the stockpile to target sequence, etc. Conservatism in design is motivated primarily by the need to fully satisfy these requirements and only secondarily by concern for a possible CTB. Generally, it has been assumed that some level of continued testing will be possible to support our confidence in the reliability of our weapons.

STAR WARS

Mr. Fazio. There has been speculation that a specially designed device could be developed that would optimize System Generated Electromagnetic Pulse (SGEMP) as a countermeasure to U.S. space-based SDI assets. Has DOE investigated the possibility of using SGEMP as an SDI countermeasure? How would such a device function, and what measures would have to be taken to shield spaceborne military assets from such a device?

Admiral Foley. As part of our nuclear directed energy weapons research, we are investigating the feasibility of nuclear driven microwave weapons.

DELETE

DELETE

Mr. Fazio. What is the justification for and current status of the Hypervelccity Pellet Program?

Admiral Foley. The nuclear-driven hypervelocity pellet program, like the other nuclear directed energy weapon concepts, is being researched to determine whether or not the Soviets might develop similar weapons to place a future U.S. defensive system or our strategic deterrent forces at risk. Our research program is achieving excellent progress.

DELETE

DELETE

Mr. Fazio.

DELETE

Admiral Foley.

DELETE

Mr. Fazio.

DELETE

Admiral Foley.

DELETE

NUCLEAR ARTILLERY

Mr. Fazio. Have NATO governments formally decided to approve deployment of the new W79 and W82 rounds?

Dr. Wagner.

DELETE

DELETE

NUCLEAR ARTILLERY

Mr. Fazio. I understand that General Rogers has now made his detailed recommendations regarding the future size and composition of NATO's nuclear stockpile, including those in service with Allied military units. Have any decisions been made regarding the implementation of these recommendations?

Dr. Wagner.

DELETE

DELETE

NUCLEAR ARTILLERY

Mr. Fazio.

DELETE

What are the specific requirements that generate a need for DELETE of these shells, and how many DELETE warheads would be needed to fulfill these requirements?

Dr. Wagner.

DELETE

DELETE

NUCLEAR ARTILLERY

Mr. Fazio. Does DOE plan to request relief from the Nunn-Johnston restrictions to meet these additional requirements? Please provide a breakdown of the additional costs that would be incurred in producing additional quantities of these shells in order to meet the Secretary of Defense stated worldwide requirements for the W79 and W82?

Admiral Foley. Justification of additional requirements that would support an increase in the number of modernized nuclear artillery shells above the currently authorized level of 925 is the responsibility of the Department of Defense. A budget quality estimate is not available at this time. Several factors will influence the amount of funding required including the revised total quantity to be built, when these units will be produced, the build quantity mix between the W79 and W82 warheads, and interrelationships with other systems in production. Once these assumptions are known, we could provide a firm estimate of the funding required to support the increased nuclear artillery build quantity.

NUCLEAR ARTILLERY

Mr. Fazio. What is the status of the *DELETE*

DELETE study undertaken to devise methods to shorten the timeframe needed to withdraw nuclear artillery shells from the nuclear weapons storage sites?

Dr. Wagner.

DELETE *DELETE*

NUCLEAR ARTILLERY

Mr. Fazio. The FY 87 Department of Energy (DOE) budget construction project data sheets continue to report that "the projectile size (6.2 inches in diameter) and the severe gun-firing environments will require difficult processing methods to further miniaturize components and to ensure that the components meet design specifications." According to the data sheets, the manufacturing and process uncertainties that remain to be resolved by the production complex include machining a critical structural feature within the projectile. What progress has been made in the past year towards resolving these outstanding uncertainties? Have actual gun-firing tests demonstrated that the W82 will survive the severe gun-firing environment of the 155mm howitzer?

Admiral Foley. The primary emphasis in the W82 program during 1985 was on research and testing activities to characterize the gun-firing environments of United States 155mm howitzers.

DELETE

DELETE

NUCLEAR ARTILLERY SHELLS

Mr. Fazio. Dr. Wagner has stated that the U.S. has no plans to preposition the W82 in other areas than Europe at this time, but that "we would probably consider deploying it in much the same way as the W48, which it will replace." My understanding is that in the past, the W48 has been prepositioned in *DELETE* . Do you anticipate that the W82 would also be prepositioned at these sites?

Dr. Wagner.

DELETE

NUCLEAR ARTILLERY SHELLS

Mr. Fazio.

DELETE

Dr. Wagner.

DELETE

NUCLEAR ARTILLERY SHELLS

Mr. Fazio. Why have DOD and DOE witnesses cited European production of the FH-70/SP-70 howitzer as evidence of European desire for development and deployment of the W82 155mm artillery fired atomic projectile, when the British Minister of State for Defense Procurement, Adam Butler, has stated that "this howitzer has no nuclear role and is not intended to be a nuclear delivery system?"

Dr. Wagner.

DELETE

DELETE

NUCLEAR ARTILLERY SHELLS

Mr. Fazio. While it is physically possible for any artillery shell to be fired by a gun of the same calibre, are some DELETE DELETE DELETE howitzer batteries going to receive the necessary unit training, supplementary equipment and organizational infrastructure to support a nuclear role?

Dr. Wagner.

DELETE

Mr. Fazio. Have NATO governments formally responded to SACEUR's recommendations regarding modernization *DELETE*

DELETE

Dr. Wagner.

DELETE

W-82

Mr. Fazio. Have any decision been made by allied governments to implement Gen. Roger's recommendations. There is a significant distinction between positive signals from defense ministers on one hand and the actual commitment by their heads of state to deply the W-82 on the other. Have we gotten much further with the heads of state?

Dr. Wagner.

DELETE

W-82

Mr. Fazio. Why do we appear to be no further along in Europe this year than a year ago? Have we made some secret progress?

Dr. Wagner.

DELETE DELETE

W82

Mr. Fazio. Your FY 1987 Congressional Budget request indicates that manufacturing and process uncertainties remain unresolved, as they were last year. Has there been progress resolving these problems so you can meet your initial operational capability in DELETE

Admiral Foley. Because the W82 was still in the development engineering phase (phase 3) of warhead development throughout 1985, the work performed on this program was almost entirely devoted to developmental and testing activities. With the planned initiation of production engineering (phase 4) in May 1986, much more emphasis will be placed on process development and the issues of producibility. It was, thus, never expected or scheduled for significant progress to be made in solving manufacturing uncertainties in FY 1985.

DELETE

Mr. Fazio. Last year, you got $15 million for the manufacturing facilities, and this year you want another $10 million. Is it premature to be obligating these funds in view of the remaining technical difficulties?

Admiral Foley. No. The long lead times associated with capital construction items require that these projects be funded now in order to meet the current warhead production schedule. In fact, current component production schedules indicate that some of the components on the critical path of warhead production are those which require the construction of new, unique facilities for their fabrication.

Mr. Fazio. In testimony before the Senate Energy & Water Appropriations Subcommittee, Dr. Wagner said the W82 must be more "gun-rugged" than the W79, and that joint test assemblies and gun-firing tests would be needed to ensure that the W82 would survive the in-bore environment of the 155mm howitzer? What do you have new up your sleeve to give hopes that the in-bore environment has become any more moderate or the shell itself tougher? Are you any closer than you were last year?

Admiral Foley. The only way to ensure that the W82 will survive the higher acceleration, shock, and torsional loadings of the 155mm howitzer is by designing it to be compatible with these more stringent environments and testing it through gun firing.

DELETE

DELETE

Mr. Fazio.

DELETE

Isn't there a real threat that Warsaw Pact aggressors would head immediately for these DELETE sites in order to disarm them, and thus be inclined to drop parachuters on them within a matter of a few minutes? What implications has this possibility for our ability to restrain our entry onto the nuclear stage?

I understand there is a study underway to shorten the removal time? How short can we likely get it? How long does it takes a plane to cross the East German border and unload paratroppers on these sites? Can we possibly expect their successful evacuation within that extremely limited time?

You might respond that we would guard these suites; we would not let even paratroopers simply overrun us. But how do you intend on actually evacuating these weapons when your wagons are circled in a defensive battle?

Dr. Wagner.

DELETE

DELETE

DELETE

DELETE

Mr. Fazio. Why are we committing to deploying these weapons when these rather fundamental questions about their practicality remain uncertain?

Dr. Wagner.

DELETE DELETE

Mr. Fazio. If SDI is to be a nonnuclear program, why are we doubling the nuclear portion of SDI?

Admiral Foley. The President's policy for SDI is a truly effective nonnuclear defense and this Department unconditionally supports that policy. The primary reason that we are pursuing nuclear directed energy weapons research is to understand the Soviets' capability to design and deploy similar weapons which would put the United States strategic deterrent force or a future defensive system at risk. These data are required as soon as possible because of the potential impact they could have on current nonnuclear SDI research and planning. The increased funding sought for FY 1987 accelerates the DOE program toward the technology-limited pace necessary to ensure that feasibility data will be available to meet DOD decision milestones.

ATOMIC ENERGY DEFENSE ACTIVITIES BUDGET INCREASE

Mr. Conte. The budget for Atomic Energy Defense Activities calls for an increase of almost 14 percent over last year, from $7.2 billion to $8.2 billion. That does not seem quite like the percentage we were anticipating in the defense area. How much of that billion dollar increase represents a recovery of Gramm-Rudman cuts, how much is intended to cover inflation, and how much represents a real growth increase?

Admiral Foley. While this increase appears to be large it should be noted that as a result of the reductions necessitated by the Gramm-Rudman legislation, the FY 1986 revised appropriations level is actually lower than the FY 1985 appropriation for Atomic Energy Defense Activities. The FY 1987 request of $8.1 billion for this appropriation essentially restores the funding levels for these high priority national security programs to approximately the FY 1985 level of activity, after adjusting for inflation. These funds are necessary if the Department is to continue to meet its essential national security responsibilities for producing nuclear weapons systems and supporting the national priority effort on the Strategic Defense Initiative. Also within our total available resources, we must accommodate other critical defense activities such as the continuation of a strong research and development base technology effort, the maintenance and restoration of our production plants, the revitalization of our research and development facilities, and the continued allocation of resources to accommodate priority requirements associated with safeguarding the Department's facilities and materials, and assuring that environmental and safety concerns are quickly detected and corrected in a responsible and cost effective manner.

AIRCRAFT REQUIREMENTS FOR FY 1987

Mr. Conte. You are requesting five additional aircraft for FY 1987. What sort of aircraft will they be, where will you obtain them and under what procedure, and what will they be used for?

Admiral Foley. The Atomic Energy Defense Activities appropriation language provided authority for the Department of Energy to purchase five aircraft. All of these aircraft, which were being considered for purchase, are currently being leased. Four are based at Albuquerque and one is at Savannah River. The aircraft at Albuquerque included one McDonnell-Douglas DC-9, and three DeHavilland DHC-7's. The Department initially considered these aircraft for purchase, however, they will continue to be leased through FY 1987. The single aircraft planned for Savannah River is a Messerschmitt-Bolkau-Blohm (MBB) BK-117 Twin Engine Helicopter. The MBB BK-117 helicopter serves the safeguard and security needs of the Savannah River Plant and is a

DELETE *DELETE*

the MBB BK-117 helicopter is planned to be purchased as a sole-source procurement in FY 1987. Procurement of this helicopter will allow the Department to return the one currently on loan from the National Oceanic and Atmospheric Administration.

SOVIET OBSERVATION OF U.S. WEAPONS TEST

Mr. Conte. Recently the President offered to permit Soviet observation of a weapons test, presumably under some sort of controlled circumstance. How could this be done without compromising security interests?

Admiral Foley. Operational and administrative details are being prepared by the Department of Energy for the possible observation of a future U.S. weapons test by personnel of the Soviet scientific community. The specifics of such a possible visit to the U.S. nuclear test facility by Soviet Bloc personnel have not been completed; however, the Committee can be assured that every detail will be considered to avoid any remote possibility of compromising U.S. security interests.

WARHEAD RELIABILITY

Mr. Conte. There have been recent press reports indicating that there may be problems with the reliability of our nuclear weapons stockpile. Would you comment on those reports, indicate what your testing program has indicated about long-term warhead reliability? What can be done about this problem?

Admiral Foley. I am not certain which press reports you are referring to. However, there was one recent article reporting on testimony by Department of Energy representatives and laboratory scientists before the HASC Special Panel on Arms Control and Disarmament Activities in September of 1985. At that time, certain past problems with nuclear weapons were described. In the cases described, nuclear testing was required either to discover or resolve those problems.

Nuclear weapons are designed and engineered to assure the highest level of reliability appropriate for their critical mission. One way we can assure our designs are, in fact, as reliable as we believe them to be is to perform nonnuclear tests of the components and nuclear tests of the full system. Nuclear weapons are complex devices whose physics and engineering aspects are not fully understood. They are made with many chemically active and radioactive materials whose properties and interaction with each other have been found to change over time, sometimes in unexpected ways. We have also found, generally through nuclear tests, that relatively small changes in components can sometimes have unexpectedly significant effects on overall system performance. We have learned a great deal from our past experiences and are taking all practical steps to minimize future stockpile problems. Provided we can continue to effectively monitor the stockpile with both nuclear and nonnuclear tests, the high reliability and credibility of the stockpile should be maintained.

INERTIAL CONFINEMENT FUSION PROGRAM STATUS

Mr. Myers. What is the status of the Inertial Confinement Fusion (ICF) Program, and what amounts are estimated for the various contractors for 1987?

Admiral Foley. The ICF program was funded in FY 1986 at $145 million and encompassed the Lawrence Livermore National Laboratory (LLNL); the Los Alamos National Laboratory (LANL); Sandia National Laboratories, Albuquerque (SNLA); KMS Fusion, Inc. (KMSF); the University of Rochester's Laboratory for Laser Energetics (UR/LLE), and the Naval Research Laboratory (NRL).

In FY 1987, the ICF program activities budget at the three national weapons laboratories has been merged within the Weapons RD&T budget request line item. The purpose of this approach is to allow the laboratory directors greater flexibility in managing their resources to support TN weapons R&D, SDI initiatives, and ongoing ICF R&D, which can be of significant importance to both TN and SDI weapons in the intermediate term.

I would like to insert for the record, the overall estimated amounts for the various contractors for FY 1987.

(The information follows:)

Estimated FY 1987 ICF Program Budget by Contractor

	FY 1987
LLNL	$36.0M
SNLA	29.0M
LANL	21.5M
National Labs Subtotal:	$ 86.5M
KMSF	$ 12.0M
UR/LLE	8.0M
NRL	2.5M
Support Labs Subtotal:	$ 22.5M
Total FY 1987 ICF Program:	$109.0M

STRATEGIC DEFENSE INITIATIVE

Mr. Conte. How much of the energy defense programs budget is related to the SDI initiative? Would you identify those programs that are completely or partially SDI-related.

Admiral Foley. Within the Atomic Energy Defense Activities Appropriation a portion of the weapons research, development, and testing program is in support of strategic defense research. In FY 1987, $536 million of the $2,077.4 million weapons research, development, and testing budget request is estimated to be in support of strategic defense research.

Mr. Conte. One of the areas that has received publicity during the past year is the question of safety and environmental compliance at the weapons laboratory and manufacturing facilities. What is being done to address these problems?

Admiral Foley. The weapons complex is spending in excess of $500 million annually for environmental protection, and this will continue for many years. The Atomic Energy Act, as amended in 1954, requires the Department to regulate the handling of radioactive substances including such materials as high level waste and transuranic (TRU) wastes. With a few exceptions, the Department has done an outstanding job and, in fact, has been a leader in acquiring information about the way radionuclides act in the environment.

With respect to chemical pollutants, the story is somewhat different. Over the years, we have hired the best companies to run our plants and production facilities to bring to us their management expertise and industrial experience. They, with Department of Energy concurrence, followed the normally accepted practices in discharging plant effluents into the environment. With the wisdom of hindsight, we now know, for example, that it was not good practice to release organic chemicals or heavy metals into the soil.

With the increase in knowledge about the impacts of industrial pollution, we have been modifying our hazardous materials handling practices. Likewise, Congress has passed laws which require us to change our way of doing business. Since 1945, there have been over 25 laws passed by Congress regulating the way industrial and Federal facilities discharge effluents, dispose of hazardous wastes, provide occupational safety and health, and carry out other industrial practices. These laws have required Federal agencies, such as Environmental Protection Agency, and the states to establish and enforce regulations. In order to comply with the regulations, we and the private sector must spend large sums of money to bring our methods of operating up to present day standards and to clean up mistakes of the past. I am fully in support of Secretary Herrington's recent statement establishing an environmental policy for the Department. I intend that our facilities come into compliance with environmental laws and regulations and that our plants be considered to be responsible neighbors in the communities where they are located.

DEFENSE WASTE PROGRAM

Mr. Conte. What is the relationship between the defense waste program and the civilian waste program, as well as the degree of cooperation between them? Is the defense waste program in a position to support research on such initiatives as subseabed disposal?

Admiral Foley. There is a high degree of cooperation between the two programs. Organizationally, a separate Office of Civilian Radioactive Waste Management was established within the Department of Energy in compliance with the Nuclear Waste Policy Act of 1982. The two programs are working very closely to avoid duplication of efforts and to facilitate exchange of all applicable information. Regarding research on subseabed disposal of high-level waste, we cannot support this particular research since it has been determined that DOE should proceed with arrangements for disposal of defense high-level waste in civilian repositories, to be developed by the Office of Civilian Radioactive Waste Management.

W82 155mm

Mr. Conte. What is the status of the 155mm projectile program?

Admiral Foley.

DELETE *DELETE*

RETAINING RESEARCH AND DEVELOPMENT CAPABILITY

Mr. Conte. To what extent will, or can, the defense program pick up some of the nuclear, especially fission, research and development capability that will be lost if the civilian nuclear budget is adopted?

Mr. Foley. We will attempt to retain as many of the scientists and engineers as possible to meet our laboratory or other contractor needs in Defense Programs, such as in the areas of weapons research and development, nuclear materials production, and defense waste management.

SPECIAL ISOTOPE SEPARATION

Mr. Myers. What impact will the Special Isotope Separation process have on the budget for materials production once it begins producing? Will SIS enable you to retire today's more expensive production facilities?

Mr. Meinhardt. Operation of an SIS production plant would require about $55 million per year and would provide material at a unit cost below that of the existing complex.

An SIS production plant would provide a needed measure of flexibility to the plutonium production complex, and it would serve as a contingency against interruption of the supply of material from our reactors. It would not, however, be a substitute for these reactors as long as they are required to meet stockpile requirements; e.g. to sustain the viability of the stockpile by producing tritium. Availability of SIS could permit repair or maintenance of existing facilities without incurring supply shortfalls.

DEFENSE WASTE PROCESSING

Mr. Myers. Is there any overlap between the defense waste processing program and the civilian waste program? Is there any technical reason that the two programs should be administered separately with separate waste repositories built?

Mr. Meinhardt. There is no overlap between the defense and the civilian waste management programs. We are taking advantage of opportunities for technology exchange and transfer, and a close working relationship exists. There are no technical reasons for separate high-level waste repositories. Section 8 of the Nuclear Waste Policy Act of 1982 requires the disposal of defense high-level waste in a civilian repository unless the President finds that a defense waste only repository is required. On April 30, 1985, the President concurred with the Department of Energy recommendation that a defense high-level waste only repository is not required. This conclusion resulted principally from the fact that joint use of the repositories provided economies of a scale that benefit both programs.

WASTE REPOSITORY SITING

Mr. Myers. If Congress decided to eliminate the siting problem of the permanent waste repository for civilian waste by merging the two programs, could the defense waste repository be expanded to accommodate civilian waste?

Mr. Meinhardt. The study, required by Section 8 of the Nuclear Waste Policy Act of 1982 and completed in 1985 by the Department of Energy, looked into the matter of a separate repository for defense high-level waste and concluded that there was no reason to develop and construct a separate defense repository. The only repository being developed in the defense program is the Waste Isolation Pilot Plant, WIPP, located near Carlsbad, New Mexico. As authorized by Congress in Public Law 96-164, this is a research and development facility, exempted from Nuclear Regulatory Commission licensing, to demonstrate the safe disposal of defense waste only. The WIPP will be used for disposal of defense transuranic waste, assuming satisfactory completion of the 5-year retrievable demonstration period. This facility is not authorized or designed for the disposal of high-level waste or spent fuel from either the defense or civilian programs. Additional geological and waste characterization studies would have to be completed to determine if the repository could be expanded to accommodate civilian high-level waste.

ARMS CONTROL NEGOTIATION

Mr. Myers. Do Arms Control and Disarmament Agency people work closely with DOE to make certain that arms negotiations are compatible with DOE production capabilities?

Admiral Foley. DOE's Office of International Security Affairs represents DOE in a number of interagency committees such as the Arms Control and Verification Committee, whose membership includes the Arms Control and Disarmament Agency (ACDA). In this interagency forum the ACDA and DOE work closely together on negotiations that may ultimately affect DOE's weapons production capabilities.

NEED FOR NICKEL BATTERIES

Mr. Fazio. Will the Department please report back to the Subcommittee on whether the potential customers of the plasma separation process--Sandia and governmental agencies--have in fact come a determination that they do not want these nickel batteries?

Mr. Meinhardt. DOE has recently begun reevaluating the need for Nickel betacells. As part of the evaluation, Sandia and other interested government agencies will be requested to provide input on the need and timing for Nickel betacells.

I would be pleased to provide this subcomittee with the results of this evaluation when they are available.

NEED FOR LONG LIFE POWER CELLS

Mr. Fazio. Will the Department please report back to us on why it feels there either is little need for long life miniature power cells or why there are more suitable alternatives? What are those alternatives; why are they more suitable; how much is or would their development cost; and how long would it take to develop them?

Mr. Meinhardt. DOE is currently studying the area of long life minature power supplies. We will be happy to supply you with the results of this study when it is completed.

PSP INVESTMENT

Mr. Fazio. Please compare phase out costs with completion costs for this larger machine, and explain why the dollars invested would be better written off?

Mr. Meinhardt. The closeout of the PSP program would require $13.4 million and take approximately 16 months according to information supplied by the PSP contractor. The current DOE investment in the PSP program in approximately $140 million.

The cost, as supplied by the PSP contractor, for an expanded production facility would be $110.5 million for FY 1986 through FY 1990. The costs included in this estimate are: new production facility construction; $37.9 million; production development, $53.6 million; and production mission startup, $19.0 million. Additionally it will take approximately $9 million per year to operate this production facility. Assuming nominally a 10 year operating period, the cost of operation is $90 million. Therefore development, construction, startup and operation of the new facility will cost $200.5 million over the next 15 years.

Since the invested cost is $140 million and the closeout cost is only $13.4 million, it would seen prudent, in these times of fiscal constraint, to closeout the PSP program and avoid immediate costs of $110.5 million and future costs of approximately $90 million if no firm need for a PSP facility can be identified.

PSP EXPANSION COST

Mr. Fazio. What is your response to the argument that the costs of enlarging our capacity is not significantly larger than maintaining capacity at a much lower level? Please supply figures supporting your findings and assertions.

Mr. Meinhardt. DOE estimates the cost of operating the existing PSP facility to produce small amounts of separated product at about $10 million per year. This is based upon the PSP contractor's estimates of $7 to $9 million per year to operate a full scale production facility. It is assumed that since no expansion is necessary in this case, no development costs are necessary; however since the existing facility is a development facility, the operating costs are expected to be slightly higher than for an actual production facility.

The estimated time to enlarge our capacity, which includes constructing a new PSP facility, is five years. The cost of maintaining a low level capacity during this time would be $50 million assuming excess FY 1986 funding would be carried over to FY 1987. Based on information supplied by the PSP contractor, the cost to enlarge our capacity including: new facility construction, performance and production improvements and production startup would be $110.5 million.

Based on these figures, DOE considers the costs of enlarging our capacity to be significantly greater than maintaining our existing capacity. This is especially true if no cost effective mission for an expanded facility can be identified.

ALTERNATE APPLICATIONS

Mr. Fazio. What other applications might there be for this technology; could it be used in conjunction with photovoltaic cells to even out the supply of PV electricity? Is research on the potential and manufacturing of this material going on elsewhere in DOE?

Mr. Meinhardt. Photovoltaic cells are a candidate for space power applications, but they are of relatively low power and therefore are not of interest as a prime power supply for DOE defense applications. The research on this material is carried out under the Departments' Division of Solar Electronic Technologies.

STATEMENT OF SYLVESTER R. FOLEY, JR.

ASSISTANT SECRETARY FOR DEFENSE PROGRAMS
DEPARTMENT OF ENERGY

FY 1987 APPROPRIATIONS HEARINGS

Mr. Chairman and Members of the Committee, I am pleased to make my first appearance before you in support of the FY 1987 Department of Energy's Atomic Energy Defense Activities Appropriations request of $8.2 billion. This request includes about $600 million for the Naval Reactor Program which Admiral McKee will discuss. As the Assistant Secretary for Defense Programs, I am responsible to Secretary Herrington for the Department's nuclear weapons research, development and testing, weapons production, nuclear materials, defense waste management and safeguards and security programs. I would like to share my personal views and discuss the severe challenges we face to effectively plan and execute our critical National Security Program. The Department's funding request for FY 1987 reflects this Administration's commitment to a strong national defense capability while recognizing the need for fiscal restraint.

I will briefly describe the Defense Programs mission, the essential programs, and the thrust of our policies to achieve our goals. My programmatic Deputy Assistant Secretaries will be available to provide testimony or answer questions related to their specific plans supporting this effort.

It is our responsibility to provide and maintain this Nation's Nuclear Weapons Complex with sufficient capacity and capability to support national policy objectives and to assure a prudent level of flexibility in national security options. Nevertheless, I am committed to the long-term goals of this Administration to reduce and eventually eliminate nuclear weapons as instruments of war. In the near term we must maintain a strong national deterrent posture.

Congressional support over the years has been the key to successful execution of our responsibilities within Defense Programs. The Department of Energy and the Department of Defense jointly assess nuclear weapons requirements to assure essential new weapon deliveries are made within the necessary fiscal constraints of today's environment. Further we must accommodate other critical activities such as safeguards and security and environmental compliance within those same fiscal constraints. Our budget request for FY 1987 therefore specifically supports the following:

- Meet the weapons production requirements provided by the President's annual Nuclear Weapons Stockpile Memorandum.

- Continue to support the national Strategic Defense Initiative Program.

- Assure the continued availability of nuclear materials in the near- and long-term.

- Conduct a vigorous and balanced research, development, and testing program.

- Continue safe management of radioactive waste and make progress in implementing final disposal actions.

- Accommodate increasing requirements associated with safeguards and security and assure environmental and safety compliance are maintained.

- Continue to restore, revitalize, and maintain Department of Energy facilities to meet essential current and future requirements.

Our very best efforts are required to manage these programs as effectively and efficiently as possible. Sound business practices and the careful review of requirements to meet essential program needs are the primary objective of Defense Programs management. I stress the word "essential" because we must make tough choices among competing programs and each choice must be absolutely necessary.

In regard to the FY 1986 impact of the Gramm-Rudman-Hollings legislation, I personally share the Administration and the Congressional desire to control the budget deficit; however, this legislation will have a significant but, manageable impact on our priority program activities. We are working closely with the Department of Defense and the National Security Council to adjust our production and research, development and technology programs to achieve a balance with requirements for new weapons development and deployment of new systems. In spite of our best efforts a reduction of $352 million will impact some key production and research efforts.

Because of the reductions in FY 1986, we must adjust our plans in order to mitigate impacts in FY 1987 and beyond. Our Defense Programs priorities reflect the primacy given to overall national security objectives related to meeting the needs reflected in the Stockpile Memorandum and to research in support of the Strategic Defense Initiative. We need to continue to maintain a strong research and development technical base to support the future while continuing to revitalize our research and development facilities. It is also vitally important to maintain and modernize our production plants to operate effectively and efficiently, as we ensure production capacity necessary to meet operational schedules. Finally, we must continue to make progress to assure facilities and materials are secure and safe from potential adversary actions and that environment and safety concerns are quickly detected and corrected responsibly and cost effectively.

Defense Programs is requesting an Appropriations of $7.6 billion which will allow growth of about 10 percent after adjusting for inflation and Gramm-, Rudman-Hollings (Chart 1). In the research, development, and testing program, the increase is primarily attributed to research to support the Strategic Defense Initiative, which focuses on nuclear driven directed energy weapons concepts. Inertial fusion weapons activities will also be integrated into the technology base. Increases in weapons production/workload are associated with eight different types of nuclear warheads and bombs for the Department of Defense and to maintain weapons currently in the stockpile. These increases also provide for essential underground nuclear tests which are fundamental for maintaining a strong research and development technical base, enabling stockpile modernization, and validating the stockpile reliability. Our FY 1987 request will provide adequate nuclear materials for the production of weapons during the directive years of the Nuclear Weapons Stockpile Memorandum as well as supporting security and environmental improvements essential to continue our operations. Increases are also necessary in our Defense Waste Programs as we prepare to transition from a storage mode of operations to preparation of waste for final disposal. Finally, the FY 1987 request continues to reflect the increases necessary to comply with environmental legislation such as the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation and Liability Act.

In the relatively short time since the President asked me to take this position and my even shorter tenure as Assistant Secretary, I have become convinced that we in Defense Programs must make some changes in the way we do business. We must get ahead of the game rather than be reactive. In the last few months I have studied the FY 1987 budget process and participated in the efforts to absorb reductions mandated by the Gramm-Rudman-Hollings Act. These specific efforts have convinced me of the need to implement a strong strategic planning capability within Defense Programs. We must develop and achieve consensus on our long-range plans and goals. This strengthened planning process, coordinated with the Department of Defense, is the only way we can face the imperatives of fiscal constraints and budget reductions, and still make the decisions which cover both the short-range and long-range needs.

These changes are consistent with the findings and recommendations of the President's Blue Ribbon Task Group on Nuclear Weapons Program Management. The Department of Energy and the Department of Defense are working together to develop achievable priorities and resources requirements. For example, during the recent budget cycle, the Department of Energy defense request was adjusted to strengthen the research and development technical base through offsets to the Department of Defense account.

I have also recently completed some changes in organization and personnel within Defense Programs that supports this redirection in emphasis and priorities (Chart 2). Let me take a moment to briefly describe the Defense Programs organization and the people responsible, some of whom will be providing testimony to you later.

Major General Ken Withers will continue as Deputy Assistant Secretary for Military Application, with responsibility for weapons research, development, and production including the Inertial Confinement Fusion and Stategic Defense Initiative research. Mr. John Meinhardt is the Acting Deputy Assistant Secretary for Nuclear Materials, with responsibility for Nuclear Materials Production and Defense Waste and Transportation Management.
Mr. Ed Badolato is the Deputy Assistant Secretary for Security Affairs with responsibility for the safeguards and security at our DOE facilities.
Mr. Charles Boykin will continue to have responsibility for foreign intelligence and threat assessment as Deputy Assistant Secretary for Intelligence, and Dr. Julio Torres assumes the duties as Acting Director for the Office of Security Evaluations. The outyear planning process has been

strengthened by adding the planning function to the resource function under the newly established Office of Plans and Resource Management. Mr. James Culpepper is the Acting Director of this office. Special emphasis placed on integration of planning, programming, and budgeting will bring our management practices closer to those of the Department of Defense as recommended by the Blue Ribbon Task Group.

In conclusion, the Appropriations request of $7.6 billion before you today recognizes the strong challenge of managing the nuclear weapons complex within the fiscal constraints mandated by Congress and the President. I urge the Committee's approval of our budget request so we may work toward these objectives in the coming year. I look forward to working with you and your staff and I will keep the Committee fully and currently informed of our progress. I will be pleased to answer any questions you may have.

STATEMENT BY
THE HONORABLE RICHARD L. WAGNER, JR.
CHAIRMAN, MILITARY LIAISON COMMITTEE (MLC)
TO THE DEPARTMENT OF ENERGY
AND
ASSISTANT TO THE SECRETARY OF DEFENSE (ATOMIC ENERGY)
ON NUCLEAR WEAPONS PROGRAMS
BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

17 MARCH 1986

(U) MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, I APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU AGAIN TO PROVIDE THE DEPARTMENT OF DEFENSE (DOD) VIEWS IN SUPPORT OF THE PRESIDENT'S BUDGET REQUEST FOR THE DEPARTMENT OF ENERGY (DOE) NUCLEAR WEAPONS PROGRAM FOR FY87. I HAVE INVITED ONE MEMBER OF THE MILITARY LIAISON COMMITTEE FROM EACH OF THE MILITARY DEPARTMENTS TO ACCOMPANY ME IN ORDER TO RESPOND TO QUESTIONS CONCERNING THE SPECIFIC NUCLEAR WEAPONS REQUIREMENTS OF HIS SERVICE. THIS IS MY FIFTH AND FINAL YEAR TO HAVE BEEN GIVEN THIS OPPORTUNITY, AND I'M GRATEFUL FOR THE COURTESY YOU HAVE SHOWN ME. YOU HAVE PROVIDED CRITICAL JUDGMENTS BASED ON THOROUGH REVIEW OF THE ESSENTIAL NATIONAL DEFENSE ISSUES BROUGHT BEFORE YOU IN SUPPORTING THE VITAL ELEMENT OF OUR DETERRENT POSTURE PROVIDED BY THE DEPARTMENT OF ENERGY.

(U) WE HAVE ENTERED AN ERA IN WHICH FISCAL CONSTRAINTS HAVE NOT ALLOWED THE DEPARTMENT OF ENERGY TO SATISFY ALL OF THE THINGS NEEDED TO ENSURE OUR NATIONAL SECURITY. DIFFICULT DECISIONS ABOUT THE RELATIVE IMPORTANCE OF ESSENTIAL REQUIREMENTS HAVE BEEN MADE. IN ORDER TO ACCOMMODATE FY86 BUDGET REDUCTIONS RESULTING FROM THE "BALANCED BUDGET AND EMERGENCY DEFICIT CONTROL ACT OF 1985," IMPACTS HAVE BEEN FELT IN RESEARCH, DEVELOPMENT, AND TESTING, WEAPONS PRODUCTION, AND NUCLEAR MATERIAL PRODUCTION.

WITHIN RD&T, WE HAVE ATTEMPTED TO PROTECT WEAPONS IN DEVELOPMENT AND SDI, ALTHOUGH THE REDUCTIONS TAKEN IN SDI WILL CAUSE PROGRAM DELAYS WHICH WILL INCREASE THE DIFFICULTY OF MEETING SDIO MILESTONES; SUBSTANTIAL REDUCTIONS IN

DELETED

IN THE WEAPONS PRODUCTION AREA,

DELETED

AND MATCHED WARHEAD DELIVERIES EXACTLY WITH SCHEDULED MISSILE DELIVERIES, WITH NO SLACK, SO THAT ANY PERTURBATIONS IN WARHEAD DELIVERIES WILL DIRECTLY AFFECT OPERATIONAL CAPABILITIES. WE HAVE ACCEPTED THIS RISK BECAUSE IT IS PREFERABLE TO THE CERTAIN ALTERNATIVE OF *DELETED* FURTHER, OUR EFFORTS TO ESTABLISH A RESILIANT LONG TERM SUPPLY OF SPECIAL NUCLEAR MATERIAL HAS BEEN DAMAGED BY THE LOSS OF APPROXIMATELY ONE-HALF YEAR OF ONE PRODUCTION REACTOR BECAUSE OF REDUCTIONS IN OPERATING FUNDS.

(U) THE CAPABILITY TO FIND THE LEAST DAMAGING COMPROMISES REQUIRED BY THESE CONSTRAINTS AND SHORTFALLS HAS BEEN ENHANCED BY THE EVEN CLOSER COOPERATION BETWEEN OUR TWO DEPARTMENTS. THIS COOPERATION IS CONSISTENT WITH THE RECOMMENDATIONS OF THE PRESIDENT'S BLUE RIBBON TASK GROUP CHARTERED TO EXAMINE THE PROCEDURES USED BY DOD AND DOE IN ESTABLISHING REQUIREMENTS FOR, AND PROVIDING RESOURCES FOR, THE RESEARCH, DEVELOPMENT, TESTING, PRODUCTION, SURVEILLANCE, AND RETIREMENT OF NUCLEAR WEAPONS, AND

TO RECOMMEND ANY NEEDED CHANGE IN COORDINATION, BUDGETING, OR MANAGEMENT PROCEDURES. BECAUSE OF ITS RECOMMENDATION THAT OVERALL BUDGET PLANNING NEEDS CLOSER COOPERATION, PARTICIPATION BY THE DEPARTMENT OF ENERGY IN DOD'S PROGRAM, PLANNING, AND BUDGETING SYSTEM IS BEING PLANNED, AS WELL AS CLOSER DOD PARTICIPATION IN DOE BUDGET PLANNING. THESE CHANGES WILL SOON BE REFLECTED IN CHANGES IN HOW WE PLAN THE FY 1988 BUDGET. OUR APPROACH IS DESCRIBED IN A BROAD OUTLINE BELOW; DETAILS ARE BEING WORKED OUT NOW.

(U) THE ORIGINAL FRAMERS OF THE ATOMIC ENERGY ACT FELT THAT MANAGEMENT OF THE NUCLEAR WEAPONS PROGRAM SHOULD BE KEPT SEPARATE FROM THE DOD, BUT THAT THE MILITARY SERVICES SHOULD EXERCISE A STRONG INFLUENCE ON NUCLEAR WEAPON MATTERS. OVER TIME, THE SEPARATION OF NUCLEAR WEAPONS FROM THE MILITARY HAS BEEN GREATLY REDUCED, BUT EVERY STUDY (INCLUDING THE MOST RECENT) HAS RECONFIRMED THE ADVANTAGES OF DUAL-AGENCY JUDGMENT. THE MILITARY LIAISON COMMITTEE (MLC) ARRANGEMENT INTEGRATES, IN AN EFFECTIVE WAY, TWO NECESSARY FUNCTIONS: (1) A FORUM FOR INTERNAL DOD DELIBERATIONS ON NUCLEAR WEAPON ISSUES AND (2) THE CHANNEL BY WHICH THE DOD COMMUNICATES FORMALLY WITH THE DOE TO EXPRESS VIEWS AND CONCERNS AND TO EXERCISE THE DOD ROLE IN DUAL-AGENCY JUDGMENT. THE MLC FORUM IS ESPECIALLY IMPORTANT IN AREAS OF SAFETY AND SECURITY, AND IS AN EFFICIENT, BUSINESS-LIKE WAY TO CONDUCT ROUTINE PROGRAM MANAGEMENT BOTH WITH DOD AND BETWEEN DEPARTMENTS.

(U) A NEW GROUP, PROPOSED BY THE BRTG, THE NUCLEAR WEAPONS COUNCIL (NWC), COMPOSED OF SENIOR-LEVEL MEMBERS FROM BOTH DEPARTMENTS IS BEING CREATED TO CONDUCT INTEGRATED REVIEWS OF NUCLEAR WEAPONS ISSUES AND BUDGETS AND ASSURE APPROPRIATE CONSIDERATION OF TRADEOFF WITHIN AND BETWEEN DEPARTMENTS.

(U) ARRANGEMENTS EXIST NOW FOR EFFECTIVE COORDINATION WITH DOE, BOTH FUNCTIONALLY AND THROUGH THE MLC, ON SUCH INDIVIDUAL SYSTEM MATTERS AS THE MILITARY CHARACTERISTICS (MCS) AND THE STOCKPILE-TO-TARGET-SEQUENCE (STS). DISCIPLINE IS ENHANCED BY FORMAL STATEMENTS OF REQUIREMENTS (MC/STS) BY DOD AND FORMAL STATEMENT OF COSTS TO MEET THOSE BY DOE (I.E., PHASE 2A STUDIES AND ESTABLISHMENT OF BASELINE COST) AND, LATER, FORMAL ACCEPTANCE OF CERTIFICATION BEFORE PRODUCTION DECISION. THE MLC IS THE RIGHT DOD FORUM, WITH THE APPROPRIATE SERVICE MEMBERSHIP, TO EXERCISE INDIVIDUAL SYSTEM COST DISCIPLINE, FOR EXAMPLE, ON ISSUES REGARDING THE MILITARY NEED/BENEFIT OF SPECIAL FEATURES THAT CAN DRIVE UP THE UNIT COST OF NEW NUCLEAR WEAPONS.

(U) IN A LESS FORMAL WAY THAN WHAT WILL SOON BE ESTABLISHED, THIS CLOSER COORDINATION IS ALREADY BEING IMPLEMENTED. FOR THE BUDGET NOW BEFORE YOU, AFTER ASSESSING THE ABILITY OF THE ORIGINALLY PROPOSED DOE BUDGET REQUEST TO SUPPORT REQUIREMENTS CONSISTENT WITH THE DOD PROGRAM, OUR DEPARTMENTS REACHED AGREEMENT ON THE NEED TO AUGMENT THE DOE

REQUEST, AT THE EXPENSE OF DECREMENTING AN ALREADY FINELY HONED DOD REQUEST, WITHIN THE CONSTRAINT OF THE ADMINISTRATION'S OVERALL NATIONAL DEFENSE BUDGET TARGET. THIS ACTION DEMONSTRATES OUR MUTUAL RECOGNITION THAT THE NATION'S DETERRENT CAPABILITY IS PROVIDED BY BOTH DEPARTMENTS IN CONCERT.

(U) THIS SPIRIT OF COOPERATION BETWEEN THE DEPARTMENTS HAS EXTENDED TO THE DOE PARTICIPATION IN THE PRESIDENT'S STRATEGIC DEFENSE INITIATIVE (SDI). IN ORDER TO CLARIFY THE DOE ROLE IN SDI, SECRETARY WEINBERGER AND SECRETARY HERRINGTON ISSUED A POLICY PAPER TO CLARIFY THE ROLE OF NUCLEAR RESEARCH IN REGARD TO THE SDI. THE PAPER REITERATES THE LONG-TERM GOAL OF A TRULY EFFECTIVE NONNUCLEAR DEFENSE, BUT ADDS THAT RESEARCH ON THE NUCLEAR DRIVEN CONCEPTS IS ESSENTIAL:

(1) TO DETERMINE THE FEASIBILITY AND EFFECTIVENESS OF COUNTERDEFENSIVE NUCLEAR DRIVEN SYSTEMS THAT AN ADVERSARY MAY DEVELOP FOR USE AGAINST FUTURE U.S. SURVEILLANCE AND DEFENSIVE SYSTEMS.

(2) TO UNDERSTAND THE TECHNICAL FEASIBILITY AND IMPACT THAT SUCH CONCEPTS MIGHT HAVE ON OUR DETERRENT FORCES IF UTILIZED IN SOVIET DEFENSIVE SYSTEMS.

(3) TO EXPLORE NUCLEAR DIRECTED ENERGY OPTIONS AS SDI POSSIBILITIES IF NEEDED.

(U) A WHITE HOUSE PRESS RELEASE ISSUED LAST SUMMER FURTHER SUPPORTED THIS POLICY, STATING, ". . . SOME HAVE ASKED ABOUT THE ROLE OF NUCLEAR-RELATED RESEARCH IN THE CONTEXT OF OUR ULTIMATE GOAL OF NON-NUCLEAR DEFENSES. WHILE OUR CURRENT RESEARCH PROGRAM CERTAINLY EMPHASIZES NON-NUCLEAR TECHNOLOGIES, WE WILL CONTINUE TO EXPLORE THE PROMISING CONCEPTS WHICH USE NUCLEAR ENERGY TO POWER DEVICES WHICH COULD DESTROY BALLISTIC MISSILES AT GREAT DISTANCES. FURTHER, IT IS USEFUL TO STUDY THESE CONCEPTS TO DETERMINE THE FEASIBILITY AND EFFECTIVENESS OF SIMILAR DEFENSIVE SYSTEMS THAT AN ADVERSARY MAY DEVELOP FOR USE AGAINST FUTURE U.S. SURVEILLANCE AND DEFENSIVE OR OFFENSIVE SYSTEMS."

I WOULD LIKE TO STRESS THE IMPORTANCE TO DOD OF THE DOE SDI EFFORTS, INCLUDING THE X-RAY LASER.

DELETED

THE DOD PROGRAM SCHEDULE THEREBY ESTABLISHES A COMPATIBLE DOE PROGRAM SCHEDULE. BECAUSE OF RESULTS OF NUCLEAR TESTS AND SDI ARCHITECTURE STUDIES LAST SUMMER AND FALL, AFTER THE FY86 BUDGET WAS WELL ALONG, WE RECOGNIZED THE NEED TO

ACCELERATE THE DOE PROGRAM TO MAINTAIN THIS COMPATIBILITY. THE DOD STRATEGIC DEFENSE INITIATIVE OFFICE HAS THUS FAR PROVIDED $38M TO THE DOE TO REIMBURSABLY FUND SDI RESEARCH IN DIRECT SUPPORT OF DOD MISSION RESPONSIBILITIES. SEPARATELY, THE TWO DEPARTMENTS AGREED ON THE NEED FOR AN ADDITIONAL $62M IN FY86 TO ACCELERATE SDI ACTIVITIES DIRECTLY WITHIN THE DOE MISSION AREA. TO ACCOMPLISH THIS, WE PLAN TO SUBMIT A PROPOSED NO FUND SUPPLEMENTAL OR AN APPROPRIATION TRANSFER FROM THE DOD SDI ACTIVITY, AND I REQUEST YOUR SUPPORT IN EFFECTING THIS TRANSFER AS SOON AS POSSIBLE.

(U) THE $38M SUPPORTS EFFORTS DIRECTED IN DOD'S MISSION AREAS--SYSTEMS ANALYSIS, LETHALITY AND WEAPONS EFFECTS, AND OVERALL WEAPON SYSTEM DESIGN. A SUBSTANTIAL PART OF THIS EFFORT IS BEST ACCOMPLISHED AT LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL), LOS ALAMOS NATIONAL LABORATORY (LANL), AND SANDIA NATIONAL LABORATORIES (SNL) BECAUSE OF THE EXPERTISE AVAILABLE THERE. THIS EFFORT WILL BE PURSUED THROUGH REIMBURSABLE CONTRACTS AT THESE LABORATORIES, JUST AS WORK OF THIS TYPE HAS BEEN DONE FOR DECADES.

IN PARTICULAR, $15M WILL BE USED TO PERFORM THE RESEARCH THAT WILL ALLOW

DELETED

DELETED

AN ADDITIONAL $5M WILL BE USED TO PERFORM X-RAY LASER LETHALITY AND SYSTEM STUDIES AS WELL AS TO EVALUATE ACQUSITION, TRACKING, AND POINTING ISSUES.

EIGHT MILLION DOLLARS IS ALLOCATED FOR RESEARCH TO BETTER UNDERSTAND INTERACTION PHENOMENON AS WELL AS TO PERFORM SYSTEM STUDIES. FOUR MILLION DOLLARS WILL BE USED FOR THE STRATEGIC DEFENSE FACILITY AS REQUIRED BY LAST YEAR'S AUTHORIZATION LANGUAGE. THE SDF WILL BECOME A NATIONAL FACILITY TO SIMULATE WEAPONS EFFECTS AND TEST THE VULNERABILITY AND LETHALITY OF SDI SYSTEMS. THE REMAINING $6M IS IN A VARIETY OF SMALLER ACTIVITIES IN OTHER NDEW RESEARCH, PRIMARILY IN LETHALITY AND SYSTEMS STUDIES.

(U) WORK IN EACH OF THESE CATEGORIES HAS BEEN AUTHORIZED BY THE CONGRESS FOR FY86 BY THE DEPARTMENT OF DEFENSE AUTHORIZATION ACT, 1986 (TITLE II--RDT&E, TITLE XV--DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAM). IN PARTICULAR, AS PART OF THE FY86 BUDGET REQUEST, THE DOD SUBMITTED PROGRAM DESCRIPTIVE SUMMARIES THAT IDENTIFIED DOD NDEW ACTIVITIES AS

PART OF THE DOD SDI DIRECTED ENERGY AND SURVIVABILITY, LETHALITY, AND KEY TECHNOLOGY PROGRAM ELEMENTS.

MONEY FOR THE NO FUND SUPPLEMENTAL WOULD ACCELERATE EFFORTS MORE CLOSELY RELATED TO DOE'S MISSION AREA.

DELETED

ACCELERATION OF THESE ACTIVITIES WAS DETERMINED TO BE ESSENTIAL, PRIOR TO ANY FY86 BUDGET REDUCTIONS, TO MAINTAIN COMPATIBILITY WITH SDIO DECISION MILESTONES. THE IMPACTS RESULTING FROM THE DOE SDI BUDGET REDUCTIONS MAKE THE NEED FOR THIS TRANSFER EVEN MORE ESSENTIAL.

(U) UNDERSTANDING THE FEASIBILITY OF NDEW IN GENERAL, AND THE X-RAY LASER IN PARTICULAR, IS A PARTICULARLY CRUCIAL DETERMINANT IN EFFICIENT PLANNING FOR THE OVERALL NATIONAL SDI R&D PROGRAM. IT IS IMPORTANT PARTLY BECAUSE, IF THE X-RAY LASER IS FEASIBLE, IT COULD BE A POTENT COUNTER-SDI WEAPON FOR THE SOVIETS, REQUIRING SDI ARCHITECTURES WHICH PROVIDE SURVIVABILITY AGAINST IT. IF IT IS NOT FEASIBLE, VERY DIFFERENT APPROACHES TO SURVIVABLE ARCHITECTURES MIGHT BE BEST FOR SDI.

DELETED

(U) IT IS TO BE EXPECTED, AND IT IS HEALTHY, THAT THERE WILL BE A WIDE RANGE OF OPINION ABOUT ANY PROGRAM OF THIS TECHNICAL DIFFICULTY AND POTENTIAL LEVERAGE. I URGE YOU NOT TO ALLOW CONFUSED PUBLICITY ABOUT THIS WORK TO DETRACT FROM YOUR APPRECIATION OF THE QUALITY OF ITS PLANNING, ITS ACCOMPLISHMENTS, OR ITS IMPORTANCE TO THE NATION. CONTINUED SUPPORT FOR THIS PROGRAM IS ESSENTIAL FOR ITS IMPLICATIONS NOT ONLY TO THE SDI PROGRAM BUT ALSO TO THE VULNERABILITY OF OUR PRESENT DETERRENT FORCES.

(U) THIS ABSOLUTELY ESSENTIAL SDI-RELATED RD&T CARRIED OUT BY DOE HAS HAD A SERIOUS IMPACT ON THE OVERALL NUCLEAR WEAPON RD&T PROGRAM, WHICH IS AN INDISPENSABLE BASIS FOR CONTINUED STABLE DETERRENCE IN THE FUTURE. THE DIRECT MANPOWER FOR R&D, WHICH IS WHAT DETERMINES THE ACTUAL R&D PRODUCT, HAS ONLY INCREASED BY 15% FROM THE LOW POINT REACHED IN THE LATE 70'S AFTER A 40%, DECADE-LONG DECLINE. THIS MODEST RECENT GROWTH HAS NOT KEPT PACE WITH THE NEED TO SUPPORT FORCE MODERNIZATION, CURRENT OR FUTURE, NOR HAS IT KEPT PACE WITH DOD'S NUCLEAR-DETERRENCE RELATED RDT&E, WHICH HAS INCREASED BY 200% DURING THE PAST FIVE YEARS. THESE R&D LIMITATIONS HAVE FORCED DOE TO MAKE COMPROMISES IN THE R&D PROGRAM WHICH, IN MY OPINION, ENTAIL AN UNACCEPTABLE RISK.

(U) LET ME TURN NOW TO DOD NUCLEAR WEAPON PRODUCTION REQUIREMENTS, WHICH ARE ESTABLISHED ANNUALLY BY THE NUCLEAR WEAPONS STOCKPILE MEMORANDUM (NWSM) APPROVED BY THE PRESIDENT. DOE WEAPON PRODUCTION IS KEYED CLOSELY TO DOD DELIVERY SYSTEM SCHEDULES. EXCEPT FOR OCCASIONAL DOE PRODUCTION SCHEDULE ADJUSTMENTS TO ACHIEVE PRODUCTION EFFICIENCIES, WEAPON PRODUCTION RATES MATCH ESTABLISHED DOD REQUIREMENTS. THESE REQUIREMENTS ARE FREQUENTLY UPDATED, WITHIN THE FLEXIBILITY PROVIDED BY THE PRESIDENT, TO REFLECT CHANGES NECESSITATED BY A VARIETY OF FACTORS, INCLUDING ANY CHANGES TO PRODUCTION RATES OF ASSOCIATED

DOD DELIVERY SYSTEMS. IN THE LAST YEAR, THE MILITARY LIAISON COMMITTEE, WHICH MEETS MONTHLY, APPROVED TEN CHANGES TO THE NWSM. THE CURRENT NWSM, RECENTLY SIGNED BY THE PRESIDENT, TAKES INTO ACCOUNT THE FY86 IMPACT OF THE DEFICIT REDUCTION ACT.

WITH REGARD TO PRODUCTION OF PLUTONIUM AND TRITIUM, WE HAVE A PROBLEM OF MAJOR STRATEGIC SIGNIFICANCE WITH WHICH TO DEAL. BY DINT OF REMARKABLE EFFORTS BY DOE OVER THE PAST FEW YEARS, EFFICIENCY OF THE AGING PRODUCTION REACTORS HAS BEEN INCREASED,

DELETED

NO PROGRESS HAS BEEN MADE TOWARD PROVIDING A RESILIENT NUCLEAR MATERIAL SUPPLY SYSTEM, ONE WHICH COULD ACCOMMODATE UNFORESEEN OUTAGES AND HAS SOME RESERVE CAPACITY FOR PRODUCTION RATE INCREASES WHICH MIGHT RESULT FROM SOVIET INITIATIVES. THIS IS A MAJOR STRATEGIC ASYMMETRY, SINCE THE ANALOGOUS SOVIET CAPABILITY IS NEW, ROBUST, AND GROWING.

(U) THE JOINT CHIEFS OF STAFF AND THE SECRETARY OF DEFENSE HAVE REPEATEDLY EXPRESSED CONCERN OVER THIS SITUATION. DOD BELIEVES IT IS IMPERATIVE TO PUT IN PLACE AN ISOTOPE SEPARATION

FACILITY FOR WEAPON PLUTONIUM AND TO ACCELERATE PROGRESS TOWARD NEW PRODUCTION FACILITIES TO REPLACE THE ANCIENT REACTORS, AS WELL AS A SCRAP RECOVERY FACILITY. LOOKING AS FAR IN THE FUTURE AS THE LEAD TIMES FOR SUCH FACILITIES REQUIRES, MEANS THAT PLANNING FOR CONTINGENCIES, RATHER THAN ON THE BASIS OF CURRENT "BEST GUESSES," IS THE ESSENCE OF PLANNING. PLANNING FOR CONTINGENCIES THAT MIGHT NOT OCCUR IS DIFFICULT IN TIMES OF VERY TIGHT BUDGETS, BUT I URGE YOU TO ONCE AGAIN EXHIBIT THE FORESIGHT AND LEADERSHIP WHICH HAVE ALWAYS CHARACTERIZED THIS COMMITTEE'S STEWARDSHIP OF THIS PROGRAM, AND PROVIDE FOR THIS IMPORTANT MATERIAL NEED.

(U) THE DOE FY87 BUDGET REQUEST HAS BEEN DEVELOPED WITH CLOSE COOPERATION BETWEEN OUR DEPARTMENTS. IT IS ADEQUATE TO SUPPORT AN SDI ACTIVITY CONSISTENT WITH THE NATION'S SDI PROGRAM IF PROMPT ACTION IS TAKEN ON OUR FY86 APPROPRIATION TRANSFER REQUEST. THE REQUEST IS MARGINALLY ADEQUATE TO SUPPORT THE REMAINING RD&T ACTIVITIES NECESSARY TO SUPPORT THE DEVELOPMENT OF ADVANCED CONCEPTS FOR THE WARHEADS OF THE NEXT DECADE AND WILL SUPPORT THE WARHEAD PRODUCTION AND NUCLEAR MATERIALS PRODUCTION ASSOCIATED WITH THE REQUIREMENTS OF THE NUCLEAR WEAPONS STOCKPILE MEMORANDUM. I REMAIN CONCERNED THAT THE FISCAL CONSTRAINTS OF THE PAST FEW YEARS HAVE FORCED US TO OPERATE WITH A HIGHER LEVEL OF RISK THAN I AM COMFORTABLE WITH. THE NEAR TERM, MORE EASILY QUANTIFIABLE REQUIREMENTS, HAVE BEEN SUPPORTED WHILE THOSE ACTIVITIES ASSOCIATED WITH MAINTAINING OUR CAPABILITY, SUCH AS

RESTORATION, REVITALIZATION, AND PRODUCTIVITY RENTENTION, OPERATE AT THE MARGIN BECAUSE THE IMPACT OF LESS THAN FULL SUPPORT IS NOT AN ASSESSABLE LOSS OF PRODUCT, BUT RATHER AN INCREASE OF RISK.

(U) MODERNIZATION OF NONSTRATEGIC NUCLEAR FORCES (NSNF), AS WELL AS CONVENTIONAL FORCES, IS NECESSARY IN ORDER TO ENSURE A CONTINUING CREDIBLE DETERRENT. ALTHOUGH OUR NSNF SUPPORTS WORLDWIDE REQUIREMENTS, MOST ARE DEPLOYED IN SUPPORT OF NATO. SACEUR HAS RECENTLY COMPLETED A DETAILED STUDY OF HIS FUTURE REQUIREMENTS AS A CONSEQUENCE OF THE NATO NUCLEAR PLANNING GROUP DECISION AT MONTEBELLO IN OCTOBER 1983. I WILL BRIEFLY REVIEW SACEUR'S STUDY AND THE STATUS OF NSNF MODERNIZATION.

AT THE CONCLUSION OF THE UNILATERAL WITHDRAWAL OF 1,000 U.S. NUCLEAR WEAPONS FROM EUROPE IN 1981, NATO'S LAND-BASED TACTICAL NUCLEAR STOCKPILE WAS REDUCED FROM APPROXIMATELY DELETED DELETED WARHEADS. AT MONTEBELLO, NPG MINISTERS AGREED TO WITHDRAW AN ADDITIONAL 1,400 NUCLEAR WARHEADS FROM THE EUROPEAN STOCKPILE DURING THE FOLLOWING FIVE TO SIX YEARS. AT THE END OF 1985, THE NATO LAND-BASED NUCLEAR STOCKPILE HAD BEEN REDUCED TO ABOUT DELETED WARHEADS. SIGNIFICANT REDUCTIONS IN THE TOTAL OF TACTICAL BOMBS AND NIKE HERCULES HAVE BEEN ACHIEVED SINCE 1981, AND ALL REMAINING HONEST JOHN WARHEADS AND ATOMIC DEMOLITION MUNITIONS WERE WITHDRAWN FROM EUROPE IN 1985. BY THE END OF DELETED NATO'S LAND-BASED NUCLEAR STOCKPILE IS PLANNED TO BE

REDUCED TO ABOUT DELETED --THE LOWEST LEVEL IN OVER TWENTY YEARS.

MINISTERS ALSO CONCLUDED AT MONTEBELLO THAT THE NATO ALLIANCE MUST, IN CONJUNCTION WITH WARHEAD WITHDRAWALS, TAKE THE NECESSARY ACTIONS TO IMPROVE ITS FORCES ACROSS THE ENTIRE SPECTRUM IN ORDER TO ENSURE A CONTINUING CREDIBLE DETERRENT. SPECIFICALLY, MINISTERS SUPPORTED THE NEED FOR SEVERAL IMPROVEMENT MEASURES IDENTIFIED BY THE NATO HIGH LEVEL GROUP:

DELETED

MINISTERS ALSO AGREED THAT THE REDUCTION TO DELETED WARHEADS SHOULD NOT BE AFFECTED BY THE DEPLOYMENT OF PERSHING II OR GLCM, I.E., THAT ONE EXISTING WARHEAD WOULD BE REMOVED FOR EACH PERSHING II OR GLCM WARHEAD DEPLOYED. PERSHING II DEPLOYMENTS ARE COMPLETE AND HAVE BEEN OFFSET BY PERSHING IA WITHDRAWALS. CURRENTLY DELETED GLCM WARHEADS HAVE BEEN DEPLOYED TO NATO. THESE DELETED

GLCM WARHEADS TO BE DEPLOYED BY DELETED WILL BE

OFFSET BY FURTHER WITHDRAWLS (PRIMARILY BOMBS) FROM NATO'S LAND-BASED STOCKPILE.

SACEUR'S PLAN FOR ACHIEVING A DELETED NUCLEAR WEAPON STOCKPILE BY THE END OF 1988 IS OUTLINED IN HIS 1985 NUCLEAR WEAPONS REQUIREMENTS STUDY (NWRS). THE NWRS RECOMMENDATIONS INCLUDE: COMPLETING ONGOING NSNF MODERNIZATION PROGRAMS

DELETED

A SYSTEMATIC APPROACH WAS USED TO DETERMINE THE MINIMUM NUMBER, TYPE, AND LOCATION OF NUCLEAR WEAPONS REQUIRED TO HOLD AT RISK A RANGE OF WARSAW PACT TARGETS CONSIDERED NECESSARY TO DETER PACT AGGRESSION. WEAPON REQUIREMENTS WERE DEVELOPED USING A THREAT-ORIENTED METHODOLOGY WHICH CONSIDERS THE CONTRIBUTION OF NATO'S CONVENTIONAL FORCES

DELETED THIS METHODOLOGY CONSIDERS THE POLICIES, OPERATION PLANS, AND NUCLEAR TARGETING CONCEPTS WHICH HAVE BEEN DEVELOPED TO ACCOMPLISH NATO'S FLEXIBLE RESPONSE STRATEGY. IT INCLUDES THE NUCLEAR DELIVERY SYSTEMS AND WARHEADS PROJECTED TO BE IN NATO' LAND-BASED NUCLEAR STOCKPILE DURING THE STUDY TIMEFRAME. THE ANALYSIS ASSUMES, AND ITS RESULTS ARE DEPENDENT UPON:

- IMPROVEMENTS TO NATO'S NUCLEAR FORCES WHICH WILL ENHANCE THEIR SURVIVABILITY, RESPONSIVENESS, AND EFFECTIVENESS;

- DELETED

- DEPLOYMENT OF IMPROVED TARGET ACQUISITION, C^3I, AND INFORMATION PROCESSING SYSTEMS;

- DELETED

- IMPROVEMENTS TO NATO'S CONVENTIONAL FORCES.

I WOULD NOW LIKE TO COVER BRIEFLY IN SOMEWHAT MORE DETAIL SEVERAL FORCE IMPROVEMENT MEASURES WHICH ARE REQUIRED DELETED DELETED IN CONJUNCTION WITH THE REDUCTION OF NATO'S NUCLEAR STOCKPILE.

- COMPLETE GLCM AND PERSHING II DEPLOYMENTS. THESE DEPLOYMENTS ARE PROCEEDING ON SCHEDULE. ALL DELETED PERSHING II WARHEADS HAVE BEEN DEPLOYED TO U.S. FORCES IN THE FEDERAL REPUBLIC OF GERMANY, AND DELETED GLCM WARHEADS HAVE BEEN DEPLOYED TO U.S. FORCES IN THE UNITED KINGDOM.

. *DELETED* ALL GLCM DEPLOYMENTS WILL BE COMPLETED BY *DELETED*

- COMPLETE DEPLOYMENT OF MODERN U.S. BOMBS. MODERNIZED B61-3 AND B61-4 BOMBS WITH *DELETED* AND ENHANCED SAFETY, SECURITY, AND COMMAND AND CONTROL HAVE BEEN DEPLOYED.

DELETED

DEPLOYMENT OF MODERNIZED BOMBS TO U.S. AIR FORCES IN EUROPE IS ABOUT *DELETED* COMPLETE, AND IS SCHEDULED FOR COMPLETION IN *DELETED*

-

DELETED

ADDITIONALLY, IN ACCORDANCE WITH THE PROVISIONS OF THE FY 1985 DOD AUTHORIZATION ACT, THE PRODUCTION PROGRAM FOR THE MODERNIZED *DELETED* W82 155MM NUCLEAR ARTILLERY ROUND HAS BEGUN. THE FINAL $10M TO COMPLETE THE DOE PRODUCTION FACILITIES IS REQUESTED THIS YEAR. THIS PROGRAM IS NECESSARY TO ACHIEVE SACEUR'S LONG-TERM OBJECTIVE OF MAKING THE 155MM THE PRINCIPAL NATO NUCLEAR ARTILLERY

SYSTEM TO COUNTER EXTENSIVE SOVIET/WARSAW PACT NUCLEAR EXPANSION AND MODERNIZATION. THE W82 WILL REPLACE THE OBSOLETE, 22 YEAR OLD W48 AND WILL INCLUDE MODERN SAFETY, SECURITY, AND CONTROL DEVICES ALONG WITH PROVIDING INCREASED RELIABILITY, RANGE, AND ACCURACY. FIELDING IS PLANNED FOR DELETED

- COMPLETE CURRENT AIRCRAFT MODERNIZATION. THE MODERN F-16 AND TORNADO, WITH ENHANCED RANGE, SURVIVABILITY, AND PENETRATION CAPABILITY, ARE REPLACING THE OLDER F-4 AND F-104 AIRCRAFT IN NATO. THE F-16 IS BEING DEPLOYED WITH THE U.S., BELGIAN, DUTCH, GREEK, AND TURKISH AIR FORCES; DEPLOYMENT IS WELL UNDERWAY, AND WILL BE COMPLETED IN 1995. THE TORNADO IS BEING DEPLOYED WITH THE BRITISH, GERMAN, AND ITALIAN AIR FORCES; THE DEPLOYMENT PROGRAM IS EXPECTED TO BE COMPLETED IN 1991. ADDITIONALLY, THE DUAL-CAPABLE F-15E IS SCHEDULED TO BEGIN DEPLOYMENT WITH U.S. FORCES IN EUROPE IN 1992.

-

DELETED

DELETED

- IMPROVE FORCE SURVIVABILITY.

DELETED

- IMPROVE CONVENTIONAL AND SUPPORT SYSTEMS. IMPROVEMENTS IN CONVENTIONAL MUNITIONS, TARGET ACQUISITION AND C^3I, AIR DEFENSE, BARRIER MUNITIONS, AND CAPABILITY TO ATTACK FOLLOW-ON FORCES ARE ALSO REQUIRED IN ORDER TO ACHIEVE THE

DESIRED REDUCTION OF NSNF WEAPONS TO THE SPECIFIED LEVEL. THE U.S. AND NATO ALLIES ARE COMMITTED TO MODERNIZE THEIR CONVENTIONAL FORCES.

DELETED

(U) THE U.S. STRATEGIC DETERRENCE DEPENDS ON THE TRIAD OF FORCES, INTERCONTINENTAL MISSILES, BOMBER DELIVERED WEAPONS, AND SUBMARINE LAUNCHED BALLISTIC MISSILES. THIS RANGE OF FORCES COMPLICATES SOVIET ATTACK PLANNING, DILUTES SOVIET FORCES, AND PROVIDES HEDGES AGAINST FAILURE OF OUR DETERRENCE BECAUSE OF TECHNOLOGICAL BREAKTHROUGH IN ANY SINGLE AREA.

u

(~~CFRD~~) IN THE AREA OF THE BOMBER DELIVERED WEAPONS, THE THRUST OF OUR BUDGETARY REQUESTS IS TO RETIRE OR MODERNIZE OLD STRATEGIC BOMBS WHICH HAVE BEEN IN THE STOCKPILE FOR 20 TO 30 YEARS. ADDITIONALLY, WE WILL CONTINUE PRODUCTION OF A NEW STRATEGIC BOMB AS WELL AS WARHEADS FOR THE AIR-LAUNCHED CRUISE MISSILE AND ADVANCED CRUISE MISSILE, AND WILL CONTINUE FEASIBILITY STUDIES, TRADEOFF ANALYSES, AND COST STUDIES FOR THE REPLACEMENT FOR THE CURRENT SHORT-RANGE ATTACK MISSILE, NOW DESIGNATED AS SRAM II.

SPECIFICALLY, IN OUR BOMBER SYSTEMS MODERNIZATION, WE WILL COMPLETE OUR B28 BOMB (CARRIED IN B-52 BOMBERS) STOCKPILE IMPROVEMENT PROGRAM WHICH PROVIDES FOR ENHANCED ELECTRICAL SAFETY. ANOTHER MAJOR MODERNIZATION PROGRAM WHICH BEGAN IN FY85 IS THE IMPROVEMENT OF THE B61-1 BOMB (CARRIED BY

B-52, FB-111, B-1B AND ATB) BY CONVERTING IT TO A B61-7 BOMB WHICH INCORPORATES ENHANCED SAFETY FEATURES AND COMMAND AND CONTROL DEVICES. WE ANTICIPATE CONVERTING APPROXIMATELY

DELETED

WE WILL CONTINUE OUR PRODUCTION OF THE MODERN *DELETED* STRATEGIC BOMB, THE B83, WHICH IS COMPATIBLE WITH ALL CURRENT AND PROJECTED STRATEGIC BOMBERS. PRODUCTION OF THIS BOMB AT A RATE OF APPROXIMATELY *DELETED* PER YEAR ALLOWS US TO RETIRE B-28'S, AND EVENTUALLY WILL COMPRISE, ALONG WITH THE B61-7, OUR ENTIRE STRATEGIC BOMB STOCKPILE. OUR FINAL BOMBER CARRIED STRATEGIC SYSTEM WHICH WILL BE IN PRODUCTION IN FY87 IS THE W80-1 WARHEAD FOR THE AIR LAUNCHED CRUSE MISSILE, WHICH PROVIDES LONG-RANGE STANDOFF ATTACK CAPABILITY FOR OUR BOMBER FORCE. OUR PRODUCTION WILL BE APPROXIMATELY

DELETED

MISSILES COMPLETED. A FINAL STRATEGIC SYSTEM WHICH WILL CONTINUE TO BE DEVELOPED IN FY87 IS THE SRAM II. THE SRAM II WILL ENHANCE THE CAPABILITY OF THE BOMBERS TO PLACE HIGHLY DEFENDED TARGETS, HARDENED TARGETS, STRATEGIC RELOCABLE TARGETS, AT RISK. OF EQUAL IMPORTANCE--SRAM II WILL PROVIDE FOR THE ORDERLY RETIREMENT OF THE AGING SRAM MISSILE AND ITS W69 WARHEAD. DEVELOPMENT COST STUDIES WILL PROVIDE CANDIDATE DESIGNS, RECOMMENDATIONS, AND COST INFORMATION NECESSARY TO PRODUCE APPROXIMATELY *DELETED* WARHEADS FOR THE SRAM II. RESULTS WILL PROVIDE THE WARHEAD TECHNICAL INFORMATION NECESSARY TO

FIELD THIS WEAPON, WHICH WILL PROVIDE OUR BOMBER FORCES WITH THE ESSENTIAL CAPABILITY TO KILL HARD TARGETS AT SURVIVABLE RANGES. THE PHASE 2 STUDY SHOULD BE COMPLETED IN MAY 1986, TO BE FOLLOWED BY A PHASE 2A STUDY THAT WILL IDENTIFY A BASELINE WARHEAD DESIGN AND ASSOCIATED COST INFORMATION.

u ~~(SFRD)~~ IN THE AREA OF INTERCONTINENTAL BALLISTIC MISSILES, THE BUDGET REQUEST SUPPORTS IMPROVEMENTS IN OUR HARD TARGET KILL CAPABILITY WITH THE MORE ACCURATE PEACEKEEPER (W87) SYSTEM, AND ALLOWS US TO CONTINUE OUR FEASIBILITY STUDIES OF THE SMALL ICBM. SPECIFICALLY, THE PEACEKEEPER SYSTEM WILL REACH ITS INITIAL OPERATIONAL CAPABILITY IN DECEMBER 1986 WITH DEPLOYMENT IN EXISTING MINUTEMAN SILOS. WE WILL FINISH STUDYING THE BASING MODE FOR THE SECOND 50 MISSILES IN FY87 AND WILL MAKE OUR RECOMMENDATIONS BASED ON THAT STUDY.

FOR THE SMALL ICBM, OUR FEASIBILITY STUDIES WILL PROVIDE CANDIDATE DESIGNS, RECOMMENDATIONS, AND COST INFORMATION NECESSARY TO PRODUCE DELETED WARHEADS FOR THE SMALL ICBM SYSTEM. THE PHASE 2 STUDY RESULTS WILL PROVIDE THE WARHEAD TECHNICAL INFORMATION NECESSARY TO FIELD THIS SURVIVABLE, MOBILE SYSTEM WHICH WILL HOLD SOVIET TARGETS AT RISK IN THE TRANS- AND POST-ATTACK PHASE OF CONFLICT. THE PHASE 2 STUDY SHOULD BE COMPLETED IN MARCH 1986, TO BE FOLLOWED BY A PHASE 2A STUDY THAT WILL IDENTIFY A BASELINE WARHEAD DESIGN AND ASSOCIATED COST INFORMATION.

WE WILL CONTINUE CONCEPT STUDIES TO ENSURE TECHNOLOGICAL SUPERIORITY AND TO SATISFY CHANGING DEFENSE NEEDS. THE AIR FORCE HAS INITIATED THE HARD TARGET KILL STUDIES TO IDENTIFY NUCLEAR WEAPON CONCEPTS TO HOLD DELETED DELETED TARGETS AT RISK BY OUR STRATEGIC FORCES.

PRELIMINARY TARGET ANALYSIS IN THE PACIFIC AND EUROPE HAS IDENTIFIED MORE THAN DELETED POTENTIAL TARGETS WHICH ARE WELL HARDENED OR ARE UNDERGROUND.

DELETED

CONCEPTS BEING INVESTIGATED INCLUDE EARTH PENETRATING WEAPONS AND HIGH ACCURACY DELIVERY SYSTEMS. WEAPONS FOUND TO BE EFFECTIVE AGAINST THESE TARGETS WILL BE IDENTIFIED IN RELATION TO EXISTING AND PLANNED BOMBER AND ICBM DELIVERY SYSTEMS.

WE ARE CONTINUING TO PURSUE TECHNOLOGIES THAT WILL PROVIDE METHODS TO DIRECTLY ATTACK DEFENSES AS WELL AS METHODS TO CONFUSE OR DISRUPT DEFENSE CAPABILITIES.

DELETED

THE SOON TO BE INITIATED STRATEGIC RELOCATABLE TARGET (SRT) STUDIES WILL ATTEMPT TO IDENTIFY EFFECTIVE NUCLEAR WEAPONS CONCEPTS TO ATTACK MOBILE TARGETS WITH OUR FORCES.

DELETED THE RESULTS OF THESE STUDIES WILL COMPRISE PART OF THE AIR FORCE'S RESPONSE TO TASKING DELETED DELETED A DECISION TO PURSUE ANY OF THE RESULTING CONCEPTS WILL DEPEND UPON EFFECTIVENESS AGAINST THE SRT SET AND COST EFFECTIVENESS RELATIVE TO THE POTENTIAL SOLUTIONS.

(U) IN ADDITION TO THE MODERNIZATION OF OUR STRATEGIC DETERRENT, WE ARE ALSO EMBARKED ON A MODERNIZATION OF OUR INTERMEDIATE RANGE (THEATER) NUCLEAR FORCES. THESE FORCES ENHANCE OUR STRATEGIC DETERRENT BY ALLOWING A FLEXIBLE RESPONSE TO ANY SOVIET AGGRESSION AND PROVIDE A BALANCE TO AN OVERWHELMING SOVIET CONVENTIONAL FORCE SUPERIORITY. PROGRAMS OF COOPERATION WITH OUR NATO ALLIES ALLOW SHARING OF THE BURDEN OF THEATER DETERRENCE.

SIMILAR TO THE STRATEGIC BOMB MODERNIZATION PROGRAM, IN THE TACTICAL BOMB ARENA, WE ARE PRODUCING NEW BOMBS WITH THE MOST MODERN SAFETY AND COMMAND AND CONTROL FEATURES FOR USE BY U.S. FORCES AND OUR ALLIES IN THE HIGH TERRORIST THREAT AREAS OVERSEAS. THIS NEW PRODUCTION IS ALLOWING US TO RETIRE OLDER WEAPONS WHICH HAVE BEEN IN THE STOCKPILE FOR

ALMOST 30 YEARS. THIS YEAR WE REACHED A MILESTONE; ALL TACTICAL BOMBS FOR OUR ALLIES DELETED ARE MODERNIZED AND ALL ALERT SORTIES IN EUROPE ARE ARMED WITH MODERN B61-3/4 BOMBS, WHICH HAVE INSENSITIVE HIGH EXPLOSIVE. THE RECENT DEFICIT REDUCTION ACT HAS SLOWED THE PACE OF MODERNIZATION BELOW WHAT WE BELIEVE IS NEEDED, BUT WE ARE CONTINUING TO PRESS ON, ALBEIT AT A SLOWER RATE.

SPECIFICALLY, WE ARE CONTINUING TO PRODUCE THE B61-3/4 TACTICAL BOMB WHICH IS CARRIED BY BOTH THE U.S. AND NATO DUAL-CAPABLE AIRCRAFT. OUR ANTICIPATED PRODUCTION RATE HAS BEEN CUT DELETED FOR FY87 TO APPROXIMATELY DELETED ADDITIONALLY, OUR B61-6/8 BOMB PROGRAM (PROVIDING ENHANCED STATE-OF-THE-ART COMMAND AND CONTROL FEATURES OVER THE B61-3/4) WHICH WAS IN ENGINEERING DEVELOPMENT WAS CANCELLED BECAUSE OF THE DEFICIT REDUCTION ACT. WE NOW PLAN TO CONTINUE BUILDING ADDITIONAL B61-3/4 BOMBS TO REPLACE THE B61-6/8'S, NECESSITATING RETIREMENT OF OLDER WEAPONS FARTHER IN THE FUTURE THAN HAD BEEN PLANNED BEFORE GRAMM-RUDMAN-HOLLINGS.

THE LAST MAJOR SYSTEM INCLUDED IN OUR THEATER NUCLEAR FORCE MODERNIZATION IS THE GROUND LAUNCHED CRUISE MISSILE (GLCM). THIS SMALL, ACCURATE MISSILE ENHANCES DETERRENCE BECAUSE IT ADDS ANOTHER ASPECT TO INTERMEDIATE RANGE NUCLEAR FORCES OVER AIRCRAFT DELIVERED WEAPONS, AND BECAUSE ITS MOBILE BASING MODE ENHANCES SURVIVABILITY. IN FY87, WE WILL

CONTINUE TO PRODUCE MISSILES AT THE RATE OF APPROXIMATELY

DELETED

(U) THE DEPARTMENT OF ENERGY BUDGET, UNDER CONSIDERATION BY THIS SUBCOMMITTEE, SUPPORTS NAVY REQUIREMENTS IN STRATEGIC AND NON-STRATEGIC WARFARE. THE NAVY STRATEGIC WARHEAD REQUIREMENTS ARE DEDICATED SOLELY TO THE STRATEGIC BALLISTIC MISSILE SUBMARINE FORCE. THE NAVY NON-STRATEGIC WARHEAD PROGRAMS SUPPORT REQUIREMENTS FOR STRIKE WARFARE (ASHORE TARGETS), ANTI-SUBMARINE WARFARE, ANTI-AIR WARFARE, AND MARINE CORPS BATTLEFIELD WEAPONS.

THE NAVY HAS EMBARKED ON A PROGRAM TO REVITALIZE OUR NON-STRATEGIC NUCLEAR WARFARE CAPABILITIES. THIS PROGRAM WAS INITIATED IN 1980 BY THE NAVY AND THE SECRETARY OF DEFENSE BECAUSE THE DETERRENT VALUE OF EXISTING NAVY NON-STRATEGIC WEAPONS HAD BEEN ERODED SIGNIFICANTLY BY THE GROWING SOVIET NUCLEAR THREAT. AN EXAMPLE OF THIS THREAT TO OUR NAVY IS EVIDENT IN THE LARGE NUMBER OF AIR- AND SUBMARINE-LAUNCHED ANTI-SHIP CRUISE MISSILES IN THE SOVIET NUCLEAR INVENTORY. IN SPITE OF THIS THREAT, THE NAVY MUST MEET ITS GLOBAL COMMITMENTS IN SUPPORT OF THE MARITIME STRATEGY--THE NAVY ELEMENT OF NATIONAL MILITARY STRATEGY. THE MARITIME STRATEGY REQUIRES

THAT U.S. NAVAL FORCES OPERATE IN FORWARD DEPLOYED REGIONS, WHICH INCLUDES AN EVER PRESENT UNCERTAINTY OF NUCLEAR ATTACKS ON OUR FLEET BY SOVIET LAND-BASED AND AT-SEA FORCES. THE NAVY THEATER NUCLEAR WARFARE (TNW) MODERNIZATION PROGRAM IS DESIGNED TO REMOVE ANY INCENTIVE FOR THE SOVIETS TO USE THEIR NUCLEAR WEAPONS AT SEA. THIS PROGRAM REQUIRES HARDENING OUR SHIPS AND AIRCRAFT AGAINST THE EFFECTS OF NUCLEAR WEAPONS, SUCH AS BLAST, RADIATION, AND ELECTROMAGNETIC PULSE. IT REQUIRES A COMPREHENSIVE THEATER NUCLEAR WARFARE TRAINING PROGRAM. IT ALSO REQUIRES THAT THE NAVY SELECTIVELY MODERNIZE ITS AGING NUCLEAR WEAPONS AND ENSURE THAT THEY ARE EFFECTIVE AGAINST THE THREAT. THESE IMPROVEMENTS COMBINE TO DETER SOVIET USE OF NUCLEAR WARFARE AT SEA BY RAISING THE LEVEL OF UNCERTAINTY THAT SUCH ATTACKS WOULD SERVE THEIR WAR AIMS.

IT IS NOT DEPARTMENT OF DEFENSE POLICY TO BUY NUCLEAR WEAPONS AUTOMATICALLY AS REPLACEMENTS FOR SYSTEMS BEING RETIRED. WE REQUIRE A CLEAR CASE FOR THE UTILITY OF EACH WEAPON. NUCLEAR WEAPONS SHOULD NOT SERVE AS SUBSTITUTES FOR CONVENTIONAL WEAPONS WHERE IMPROVED CONVENTIONAL WEAPONS WILL SUFFICE. WE WILL PROCURE ONLY THOSE NUCLEAR WEAPONS WHICH PROVIDE A UNIQUE AND SUBSTANTIAL MILITARY CAPABILITY. FOR EXAMPLE, TWO YEARS AGO, THE NAVY STUDIED THE REQUIREMENT FOR AN AIR-DELIVERED STAND-OFF NUCLEAR WEAPON FOR AN ANTI-SHIP ROLE.

DELETED

THE POINT IS THAT THE NAVY NUCLEAR WEAPONS MODERNIZATION PROGRAM IS WELL-DEFINED, IN CONSONANCE WITH DOD POLICY, AND INTEGRATED WITH THE NAVY'S CONVENTIONAL CAPABILITY.

ONE OF THE MOST SIGNIFICANT RECENT DEVELOPMENTS IN THE NAVY'S NUCLEAR WEAPONS CAPABILITY IS THE TOMAHAWK NUCLEAR LAND ATTACK CRUISE MISSILE, OR TLAM/N. TOMAHAWK IS PLANNED FOR SSN-637 AND SSN-688 CLASS ATTACK SUBMARINES; DD-963 AND DDG-51 CLASS DESTROYERS; CGN-9, 38 AND CG-47 CLASS CRUISERS; AND BB-61 CLASS BATTLESHIPS. THESE SHIP AND SUBMARINE CLASSES WILL BE CAPABLE OF CARRYING ALL TOMAHAWK VARIANTS IN ANY DESIRED MIX. TLAM/N WILL GREATLY ENHANCE THE NAVY'S DETERRENCE POSTURE BY DISTRIBUTING NAVY RETALIATORY STRIKING POWER ACROSS A LARGE NUMBER OF NAVAL PLATFORMS. THIS WILL INCREASE THE NUMBER OF WARSAW PACT TARGETS THAT ARE PUT AT RISK AND GREATLY COMPLICATE SOVIET DEFENSIVE EFFORTS. TOMAHAWK COMPLEMENTS THE POWER OF THE CARRIER AIR WING AND MULTIPLIES THE EFFECTIVENESS OF THE FORCE AT SEA. TLAM/N WILL ALSO CONTRIBUTE TO THE NCA'S ABILITY TO DETER STRATEGIC CONFLICT AND WILL PROVIDE ADDITIONAL SURVIVABLE ASSETS FOR THE NUCLEAR RESERVE FORCE. TLAM/N REACHED INITIAL OPERATIONAL CAPABILITY (IOC) IN JUNE, 1984. AT PRESENT DELETED NAVY SHIPS AND SUBMARINES ARE CERTIFIED TO CARRY TLAM/N. WITHIN THE NEXT FIVE YEARS, DELETED TLAM/N MISSILES WILL BE DEPLOYED IN DELETED SHIPS AND SUBMARINES.

WITH THE EXCEPTION OF TLAM/N, THE NAVY HAS NOT DEPLOYED A NEW NON-STRATEGIC NUCLEAR WEAPON SINCE 1964. MOST OF THE EXISTING NAVY NON-STRATEGIC NUCLEAR WEAPONS WERE DESIGNED IN THE NINETEEN FIFTIES, DEPLOYED IN THE EARLY SIXTIES, DELETED

THE DOE BUDGET BEING CONSIDERED BY THIS SUBCOMMITTEE ALSO SUPPORTS DEVELOPMENT OF THE W81 WARHEAD FOR THE NUCLEAR VERSION OF THE STANDARD SURFACE TO AIR MISSILE, SM-2(N). THE SECRETARY OF THE NAVY SUBMITTED A REPORT TO CONGRESS REGARDING THE SM-2(N), AS REQUIRED BY THE FY86 DOD AUTHORIZATION CONFERENCE, IN DECEMBER 1985. DUE TO APPROPRIATION OF LESS THAN ONE-THIRD OF THE FY86 BUDGET REQUEST, THE NAVY WAS REQUIRED TO RESTRUCTURE THE SM-2(N) PROGRAM. THE DOE BUDGET SUPPORTS THIS RESTRUCTURED EFFORT. THE REQUIREMENT FOR THIS NUCLEAR SELF-DEFENSE MISSILE IS VERY REAL.

DELETED THE SM-2(N) IS A DETERRENT SYSTEM AND HAS A UNIQUE, WELL-DEFINED ROLE DELETED DELETED IT DETERS SOVIET USE OF NUCLEAR WEAPONS AT SEA BY INCREASING THE PROBABILITY THAT SUCH AN ATTACK ON THE U.S. FLEET WOULD FAIL.

ANOTHER KEY WARFARE AREA IS ANTI-SUBMARINE WARFARE (ASW). SOVIET SUBMARINE IMPROVEMENTS INCLUDE MORE DAMAGE RESISTANT DOUBLE HULL DESIGNS, TITANIUM HULL CONSTRUCTION, DEEPER OPERATING CAPABILITIES, AND TORPEDO COUNTERMEASURES, DELETED IN ORDER TO DEAL WITH THESE FASTER, QUIETER, AND MORE SURVIVABLE SOVIET SUBMARINES, NEW ASW WEAPONS ARE REQUIRED.

DELETED

THE ASW STAND-OFF WEAPON (ASW SOW), NOW NAMED SEA LANCE, IS A NUCLEAR-CAPABLE SUBMARINE-LAUNCHED ROCKET, AND IS REQUIRED TO REPLACE SUBROC,

DELETED

(U) IN FY 1986, THE CONGRESS FULLY SUPPORTED THE NAVY'S REQUESTED FUNDING FOR THE SEA LANCE (ASW SOW) RDT&E. HOWEVER, THE CONGRESS AUTHORIZED ONLY $10 MILLION AND APPROPRIATED ONLY $5 MILLION OF THE $16 MILLION REQUESTED BY THE DOE FOR CONSTRUCTION OF FACILITIES TO PRODUCE THE SEA LANCE NUCLEAR PAYLOAD. IT IS VITALLY IMPORTANT THAT THE DOE PROGRAM KEEP PACE WITH THE NAVY'S SEA LANCE MISSILE DEVELOPMENT PROGRAM, AND WE REQUEST YOUR SUPPORT OF THE FUNDING THAT DOE HAS REQUESTED IN FY 1987 FOR SEA LANCE (ASW SOW) CONSTRUCTION PROJECTS.

FOR OUR ASW AIRCRAFT FORCES, A NEW AIR-DELIVERED NUCLEAR DEPTH BOMB IS REQUIRED. IT IS EXPECTED THAT THIS MODERNIZED DEPTH BOMB, LIKE THE B57 IT REPLACES, WILL HAVE A STRIKE CAPABILITY AS WELL. THE NAVY AND THE DOE ARE IN THE EARLY STAGES OF A PHASE 2A STUDY DELETED

IT IS EXPECTED THAT IF THE PHASE 2A STUDY CALLS FOR A COMMON ASW/STRIKE BOMB, IT WILL SUPPLANT THE OLDER B43, B57, AND B61-2 AND -5 TACTICAL STRIKE BOMBS AND B57 DEPTH BOMBS DELETED THIS COMMONALITY SHOULD ALLOW SMALLER AIRCRAFT CARRIER LOADOUTS THAN WOULD OTHERWISE BE POSSIBLE WITH SEPARATE TACTICAL STRIKE AND DEPTH BOMBS, THEREBY REDUCING OVERALL STOCKPILE NUMBERS OF FLEET STRIKE AND DEPTH BOMBS. BOTH OF THESE NEW NUCLEAR WEAPONS, THE SEA LANCE (ASW SOW) AND THE NUCLEAR DEPTH BOMB, HAVE AN INITIAL OPERATIONAL CAPABILITY (IOC) DELETED

DELETED

SHIFTING NOW TO STRATEGIC SYSTEMS, THERE ARE EIGHTEEN POSEIDON C-3 SUBMARINES, AND EACH SUBMARINE CARRIES SIXTEEN MISSILES. EACH C-3 MISSILE IS LOADED WITH DELETED DELETED W68 WARHEADS. THE W68 BUILDING PROGRAM IS LONG COMPLETED; THE LAST W68 WAS DELIVERED TO THE NAVY IN 1975. DOE IS, HOWEVER, CONDUCTING A RETROFIT PROGRAM FOR THE W68 BECAUSE THESE C-3 MISSILES WILL BE USED IN POSEIDON SUBMARINES THROUGH THE 1990S. DELETED THESE WARHEADS ARE BEING MODERNIZED WITH SAFETY AND FIRING CIRCUIT MODIFICATIONS.

THE DELETED W76 WARHEAD TODAY SUPPORTS THE TRIDENT I (C-4) MISSILE. TWELVE POSEIDON SSBNS, ORIGINALLY DESIGNED TO CARRY THE C-3 MISSILE, HAVE BEEN MODIFIED TO CARRY SIXTEEN C-4S, EACH WITH A PAYLOAD OF DELETED W76 WARHEADS. THE FIRST EIGHT TRIDENT SUBMARINES, FIVE OF WHICH ARE NOW MAKING PATROLS, WILL EACH CARRY 24 C-4 MISSILES. THE EIGHTH TRIDENT SUBMARINE WILL BE DELIVERED THIS MAY.

DELETED

THE TRIDENT II (D-5) MISSILE IS NOW IN ITS THIRD YEAR OF FULL-SCALE ENGINEERING DEVELOPMENT. DOE IS DEVELOPING THE W88 DELETED WARHEAD FOR THIS MISSILE. DELETED DELETED THE D-5 WILL PROVIDE OUR SURVIVABLE, SEA-BASED STRATEGIC FORCE WITH GREATLY IMPROVED DETERRENT CAPABILITY. D-5 WILL FIRST BECOME OPERATIONAL WHEN IT GOES TO SEA IN THE NINTH TRIDENT SUBMARINE FROM ITS HOME BASE AT KINGS BAY, GEORGIA. ALL SUBSEQUENT NEW CONSTRUCTION TRIDENTS WILL BE D-5 EQUIPPED.

(U) THE ORIGINAL EIGHT TRIDENTS WILL BE BACKFITTED WITH THE D-5 SYSTEMS DURING OVERHAUL, BEGINNING IN THE EARLY 1990S, AND THE SUBMARINE BASE AT BANGOR, WASHINGTON, WILL BE EQUIPPED TO SUPPORT D-5 BY 1994 AS WE PROCEED TOWARD AN ALL D-5 TRIDENT FORCE.

THE TRIDENT II D-5 MISSILE WILL CARRY

DELETED

WARHEADS. THE FIRST TRIDENT SSBNS EQUIPPED FOR D-5 WILL CARRY DELETED THE DELETED WARHEAD. AS W76 WARHEADS BECOME AVAILABLE FROM RETIRING POSEIDON (C-4) SUBMARINES AND FROM THE FIRST EIGHT TRIDENTS,

DELETED

U ~~(S)~~ BEFORE CLOSING, THE CONTINUING INVULNERABILITY OF OUR BALLISTIC MISSILE SUBMARINES MUST BE EMPHASIZED. AFTER COMPLETING 2,393 STRATEGIC DETERRENT PATROLS SINCE 1960, EVERYTHING WE KNOW AT EVERY LEVEL OF SECURITY CLASSIFICATION CONVINCES ME THAT THE SOVIETS CANNOT FIND OUR MISSILE SUBMARINES NOW AND WILL NOT BE ABLE TO FIND THEM FOR THE FORESEEABLE FUTURE. ALL WHO ARE FAMILIAR WITH OUR SECURITY EFFORTS AGREE WITH THIS ASSESSMENT. THE SITUATION IS DYNAMIC, AND WE MUST CONTINUE OUR VIGOROUS EFFORTS TO ENSURE WE REMAIN AHEAD OF THE THREAT. THIS SURVIVABILITY OF OUR STRATEGIC SUBMARINES EQUATES TO STABILITY IN A CRISIS. SINCE OUR SSBNS CANNOT BE ATTACKED SUCCESSFULLY, NO ENEMY IS LIKELY TO INITIATE

AGGRESSION WHEN HIS ATTACK CANNOT DENY OUR CAPABILITY TO RETALIATE EFFECTIVELY. DOE'S SUPPORT OF THE NAVY'S STRATEGIC PROGRAMS IS MOST IMPORTANT TO OUR NATION'S DETERRENT CAPABILITY.

(U) I WOULD NOW LIKE TO ADDRESS TWO RECENT LEGISLATIVE ACTIONS WHICH I BELIEVE HAVE SERIOUS IMPLICATIONS FOR THE SECURITY OF THE UNITED STATES AND ITS ALLIES. THOSE TWO ACTIONS ARE HOUSE JOINT RESOLUTION-3, AND OF EVEN MORE CONCERN, HOUSE BILL 3442, BOTH OF WHICH WOULD HAVE THE UNITED STATES CEASE ALL TESTING OF NUCLEAR WEAPONS. AS YOU KNOW, FOR THE PAST TWENTY-FIVE YEARS, WE HAVE CONSISTENTLY REJECTED PROPOSALS CALLING FOR A MORATORIUM ON TESTING. THESE REJECTIONS GREW OUT OF OUR BITTER EXPERIENCE WITH THE LAST MORATORIUM (1958-1961). IN PRESIDENT KENNEDY'S WORDS, "WE KNOW ENOUGH NOW ABOUT BROKEN NEGOTIATIONS, SECRET PREPARATIONS, AND THE ADVANTAGES GAINED FROM A LONG TEST SERIES NEVER TO OFFER AGAIN AN UNINSPECTED MORATORIUM."

(U) HOWEVER, OUR OPPOSITION TO A MORATORIUM GOES DEEPER THAN AN HISTORICAL LESSON WE HAVE PURPOSEFULLY ELECTED NOT TO REPEAT. SPECIFICALLY, TESTING OF EQUIPMENT WHICH INVOLVES OUR VITAL INTERESTS AND SAFETY HAS BEEN INGRAINED INTO OUR ENTIRE TECHNOLOGICAL HERITAGE. WE KNOW THAT EVEN THE BEST DESIGNED AND CONSTRUCTED DEVICES CAN FAIL TO FUNCTION AT PARTICULARLY CRITICAL TIMES. THAT OBSERVATION IS THE REASON WE TEST

ELEVATORS, AIRPLANES, AND AUTOMOBILES. IT IS THE REASON WHY WE TEST NUCLEAR WEAPONS--TO ESTABLISH AND MAINTAIN CONFIDENCE IN THEIR RELIABILITY AND TO INSURE THEIR SAFETY. THEREFORE, IT SHOULD BE BEYOND DEBATE THAT AS LONG AS WE ARE OBLIGATED TO RELY ON THE RETALIATORY CAPABILITIES OF NUCLEAR WEAPONS TO SECURE OUR NATION AND ITS VALUES, IT WOULD BE IRRESPONSIBLE TO FOREGO TESTING OF THOSE CRUCIAL CAPABILITIES. THE FACT THAT THERE IS DEBATE ON THIS SELF-EVIDENT TECHNICAL POINT SHOWS EITHER THE TECHNOLOGICAL NAIVETE OF SOME WHO OPPOSE TESTING OR THEIR WILLINGNESS TO LET TECHNICAL JUDGMENT BE COMPROMISED BY POLITICAL BIASES.

(U) I REALIZE SOME HAVE ARGUED THAT SINCE, IN THE ABSENCE OF TESTING OF NUCLEAR WEAPONS, RELIABILITY WOULD BE REDUCED, THERE WOULD BE LESS RELIANCE ON THE NUCLEAR ARSENALS IN THE WORLD, AND THIS WOULD EVENTUALLY LEAD TO NUCLEAR DISARMAMENT. ON THE CONTRARY, THIS THESIS NOT ONLY WOULD BE DANGEROUS IF IMPLEMENTED, BUT IT OVERLOOKS THE FACT THAT THE GENERALLY STABILIZING SYSTEM DEVELOPMENTS OF THE PAST TWENTY YEARS, INCLUDING THE MAJOR REDUCTION IN THE SIZE AND DESTRUCTIVE POTENTIAL OF OUR NUCLEAR STOCKPILE SINCE THE 1960'S, ARE DIRECT PRODUCTS OF OUR TECHNOLOGY AND OUR ABILITY TO TEST THAT TECHNOLOGY. RATHER THAN LEAD TO NUCLEAR DISARMAMENT, WHAT WOULD REALLY HAPPEN IS THAT BOTH SIDES WOULD COMPENSATE FOR WORST CASE ESTIMATES OF UNRELIABILITY BY USING HIGHER YIELDS AND BY DEPLOYING MORE WARHEADS. AS FAR AS NATIONAL SECURITY IS

CONCERNED, RELYING ON UNCERTAINTY, ESPECIALLY ON SYMMETRY OF UNCERTAINTY, IS EXTREMELY RISKY.

(U) HJR-3 ARGUES THAT A MORATORIUM ON NUCLEAR TESTING "WOULD STRENGTHEN OUR EFFORTS TO PREVENT THE PROLIFERATION OF NUCLEAR WEAPONS." HOWEVER, IT IS DIFFICULT TO SEE HOW A NUCLEAR TEST BAN COULD PROVIDE AN INCENTIVE FOR NONNUCLEAR WEAPON STATES TO FORESWEAR THE ACQUISITION OF NUCLEAR WEAPONS. A GIVEN COUNTRY'S QUEST TO BECOME A NUCLEAR WEAPON STATE MUST BE GOVERNED BY TWO PRINCIPAL FACTORS, WHICH ARE UNRELATED TO NUCLEAR TESTING BY THE SUPERPOWERS. FIRST, THE COUNTRY MUST PERCEIVE A NEED TO DEVELOP A NUCLEAR EXPLOSIVE CAPABILITY. SECOND, ONCE HAVING DECIDED TO DEVELOP A NUCLEAR OPTION, THE COUNTRY MUST HAVE ACCESS TO THE TECHNOLOGIES AND MATERIALS NECESSARY FOR THE FABRICATION OF A NUCLEAR DEVICE. THE PERCEPTION OF NEED IS LIKELY TO BE DETERMINED BY A COMPLEX MIXTURE OF PERCEIVED EXTERNAL THREATS AND SUCH THINGS AS NATIONAL PRIDE AND INTERNAL POLITICAL FORCES. NUCLEAR TESTING BY THE U.S. OR THE SOVIET UNION, FOR THAT MATTER, ADDS LITTLE OR NOTHING TO EITHER FACTOR. A NUCLEAR TEST BAN IN SOME WAYS COULD ACTUALLY ENCOURAGE PROLIFERATION. FOR EXAMPLE, IF A NATION, NOW UNDER THE PROTECTION OF U.S. NUCLEAR GUARANTEES, LOST CONFIDENCE IN U.S. NUCLEAR CAPABILITY, IT MIGHT WELL DECIDE THAT ITS SECURITY INTERESTS REQUIRED THE ACQUISITION OF AN INDIGENOUS NUCLEAR FORCE.

(U) MOREOVER, WE NEED TO REMEMBER THAT A POTENTIAL PROLIFERATOR, WHO CHOOSES TO BE BOUND BY A TEST BAN, COULD STILL PRODUCE UNSOPHISTICATED NUCLEAR WEAPONS WITHOUT TESTING. SUCH AN UNTESTED WEAPON COULD HAVE A SIGNIFICANT MILITARY IMPACT IN REGIONAL CONFLICTS EVEN THOUGH THERE WOULD BE SOME UNCERTAINTY IN THE YIELD AND PERFORMANCE OF SUCH A WEAPON. IT IS WORTH NOTING THAT EVEN IN 1945 WHEN NUCLEAR TECHNOLOGY WAS STILL IN ITS INFANCY, THE UNITED STATES DID NOT TEST THE FIRST NUCLEAR WEAPON USED IN WAR.

(U) HR-3442 ARGUES THAT A "MUTUAL AND SIMULTANEOUS CESSATION OF THE TESTING OF NUCLEAR WARHEADS BY THE UNITED STATES AND THE SOVIET UNION WOULD GIVE A POSITIVE INDICATION OF A SINCERE DESIRE BY BOTH NATIONS TO END THE NUCLEAR ARMS RACE." THIS INDICATION, IT IS FURTHER ARGUED, "WOULD PROVIDE THE PROPER CLIMATE FOR CURRENT AND FUTURE NUCLEAR ARMS CONTROL NEGOTIATIONS." HOWEVER, WE KNOW FROM EXPERIENCE WHAT WILL HAPPEN WHEN WE ENTER INTO AN AGREEMENT WHICH IS NOT VERIFIABLE. THE UNRATIFIED THRESHOLD TEST BAN TREATY PROVIDES A CASE IN POINT. BECAUSE OF IMPRECISIONS AND LIMITATIONS IN OUR NATIONAL TECHNICAL MEANS, WE CANNOT ACCURATELY ASSESS THE YIELDS OF SOVIET NUCLEAR TESTS. NEITHER CAN THE SOVIETS ACCURATELY ASSESS OUR YIELDS. AS A RESULT OF THE MORASS OF UNCERTAINTY, THE UNITED STATES AND THE SOVIET UNION HAVE SPENT THE PAST DECADE EXCHANGING WHITE PAPERS ACCUSING EACH OTHER OF EXCEEDING THE PERMITTED 150 KILOTON THRESHOLD. IT IS DIFFICULT TO SEE HOW SUCH A SITUATION, WHICH

WOULD CERTAINLY BE REPEATED FOLLOWING A MORATORIUM, WOULD SERVE TO FOSTER AN IMPROVED CLIMATE BETWEEN OUR TWO NATIONS. NOT BEING SURE WHERE THE PROPERTY LINE LIES AND NOT BEING SURE HOW TO MEASURE IT HAS NEVER MADE FOR NEIGHBORLY RELATIONS.

(U) HJR-3 FURTHER ARGUES THAT A MUTUAL MORATORIUM ON NUCLEAR WEAPONS TESTING WOULD PROMOTE THE SECURITY OF THE UNITED STATES BY CONSTRAINING THE UNITED STATES' NUCLEAR ARMS COMPETITOR, THE SOVIET UNION. HOWEVER, INHERENT IN THIS ARGUMENT IS THE ASSUMPTION THAT THE UNITED STATES AND THE SOVIET UNION RELY EQUALLY ON TECHNOLOGY TO ACHIEVE THEIR NATIONAL SECURITY OBJECTIVE. BUT THIS ASSUMPTION IS ALMOST CERTAINLY WRONG, AS THE FOLLOWING POINTS WILL ILLUSTRATE.

(U) SECURITY: IN THE CLOSED SOVIET SOCIETY, THE SECURING OF NUCLEAR WEAPONS CAN BE ACHIEVED QUITE EFFECTIVELY THROUGH THE EXERCISE OF SUMMARY POLICE POWERS, CENSORSHIP, AND SIMILAR METHODS WHICH OUR SOCIETY WOULD FIND ABHORRENT. IN CONTRAST, WE HAVE ELECTED TO PROVIDE THE REQUISITE SECURITY FOR NUCLEAR WEAPONS THROUGH TECHNOLOGICAL MEANS, MANY OF WHICH ARE INTEGRAL TO THE WEAPON DESIGNS. OUR APPROACH, WHILE IN CONCERT WITH OUR SOCIETAL VALUES, IS NOT WITHOUT COSTS. ONE OF THOSE COSTS WOULD BE A GREATER TENDENCY TOWARD DETERIORATION IN A NO-TEST ENVIRONMENT.

SAFETY: THE UNITED STATES--AND NO DOUBT THE SOVIET UNION AS WELL--EXERCISES CARE THAT NUCLEAR WEAPONS PRODUCE NO NUCLEAR YIELD EVEN IN THE UNLIKELY EVENT OF AN ACCIDENT. FOR US, SAFETY IS NOT A MATTER OF COST TRADEOFFS; IT IS AN ABSOLUTE. AS SYSTEMS, STRATEGIES, AND THREATS CHANGE, THE REQUIREMENT FOR SAFETY REMAINS IMMUTABLE. OUR CONCERN FOR SAFETY HAS LED US TO INCORPORATE FEATURES WITHIN THE WEAPON DESIGN ITSELF WHICH, WITHOUT CAREFUL TESTING, COULD BE AT CROSS-PURPOSES WITH THE OPERABILITY OF THE WEAPON. WE LEARNED THIS LESSON WELL WHEN A FEATURE

DELETED

WAS INCORPORATED INTO STOCKPILED WEAPONS DURING THE 1959-1960 MORATORIUM. A SUBSEQUENT STOCKPILE CONFIDENCE TEST REVEALED THAT THE SAFETY FEATURE WOULD HAVE PRECLUDED DETONATION EVEN IF THE WEAPON HAD BEEN CALLED ON TO PERFORM ITS MILITARY MISSION.

DELETED

DELETED

OUR GOAL IS TO STOCKPILE WEAPONS WHICH ARE BOTH OPERABLE AND SAFE. TO ACHIEVE THAT GOAL AND TO INSURE THAT THE TWO OBJECTIVES ARE NOT IN CONFLICT, WE MUST CONTINUE TO TEST OUR NUCLEAR WEAPONS UNDER REALISTIC CONDITIONS--COMPUTER SIMULATIONS AND COMPONENT TESTING WILL NOT SUFFICE.

COLLATERAL DAMAGE REDUCTION:

DELETED

WE HOLD THAT REDUCING POTENTIAL COLLATERAL DAMAGE, IF DETERRENCE WERE TO FAIL, IS NOT ONLY A MORAL IMPERATIVE; IT ALSO IS DIRECTLY RELATED TO DETERRENCE ITSELF. A DETERRENT POSTURE WOULD BE LESS CREDIBLE IN A CRISIS SITUATION IF AN ADVERSARY THOUGHT WE MIGHT NOT RETALIATE BECAUSE OF THE CONSEQUENCES OF EXCESSIVE DESTRUCTION. THIS CONCERN ON OUR PART TO REDUCE COLLATERAL DAMAGE IS REFLECTED IN HOW WE DESIGN OUR WEAPONS.

DELETED

ENVIRONMENTAL CONTROLS:

DELETED

MILITARY CHARACTERISTICS/TARGET BASE: THIS FINAL ASPECT OF ASYMMETRY IS COMPLICATED, BUT IT GOES TO THE HEART OF THE ISSUES OF THE RELATIVE IMPACT OF TEST BANS ON THE US AND USSR. IN THE CASE OF THE US,

DELETED

THUS,

FOR THESE HARD TARGETS TO BE POTENTIALLY PLACED AT RISK, OUR DESIGNERS HAVE HAD TO CONSIDER HIGHER YIELDS.

DELETED

IN CONTRAST, THE SOVIETS ARE NOT CONFRONTED WITH A HARD TARGET BASE--EXCEPT FOR OUR MISSILE SILOS AND A FEW OTHER FACILITIES. MOREOVER,

DELETED

DELETED

WILL GIVE THE SOVIETS AN EDGE UNDER ANY TEST BAN REGIME INCLUDING ONE ESTABLISHED BY A VERIFIABLE THRESHOLD TEST BAN TREATY. THIS WOULD EVEN BE MORE TRUE IN A REGIME ESTABLISHED BY A COMPREHENSIVE TEST BAN TREATY.

(U) IN CONCLUSION, THERE ARE FUNDAMENTAL DIFFERENCES IN THE WAY THE US AND USSR RELY ON NUCLEAR WEAPON TECHNOLOGY TO ACCOMPLISH THEIR NATIONAL OBJECTIVES. AS A CONSEQUENCE OF THESE DIFFERENCES, ANY BAN ON NUCLEAR TESTING OR ANY THRESHOLD ON TESTING WILL AFFECT THE SECURITY OF THE TWO SOCIETIES IN DIFFERENT WAYS. AS THE PARTY WHICH HAS HISTORICALLY RELIED MOST ON THE CUTTING EDGE OF TECHNOLOGY TO ACCOMPLISH ITS GOALS, AMERICAN INTEREST WILL BE MUCH MORE ADVERSELY IMPACTED THAN THOSE OF THE SOVIET UNION. THUS, AS LONG AS WE ARE OBLIGATED TO RELY ON THE RETALIATORY CAPABILITIES OF OUR NUCLEAR WEAPONS TO SECURE DETERRENCE, NUCLEAR TESTING AND A STRONG DETERRENT POSTURE WILL REMAIN INSEPARABLE. CONSEQUENTLY, EVEN IF VERIFICATION WERE NOT A CONCERN--AND IT IS--AN EXTENSION OF THE NUCLEAR BAN TEST REGIME AT THIS TIME WOULD NOT SERVE OUR NATIONAL SECURITY INTEREST.

CONCLUSION

LET ME SUMMARIZE BY SAYING THAT THE DOE PROGRAM HAS RESPONDED HEROICALLY TO THE INCREASED REQUIREMENTS OF THE LAST FEW YEARS, BUT I FEEL THAT WE ARE OPERATING WITH A HIGHER LEVEL OF RISK THAN I AM COMFORTABLE WITH. THE ONE-TRACK PRODUCTION SYSTEM IS BEING STRAINED, WITH LITTLE BACKUP, AND AGING FACILITIES AND EQUIPMENT STILL NEED MODERNIZATION. THE AVAILABILITY OF SPECIAL NUCLEAR MATERIAL, PARTICULARLY REACTOR PRODUCTS, IS *DELETED* VULNERABLE BOTH POLITICALLY AND TECHNICALLY, AND NO RESPONSIVE RESERVE CAPACITY EXISTS. IN THE AREA OF RD&T THE PRESENT FUNDING REQUEST SUPPORTS THE DOE SDI ACTIVITY AND PREVENTS FURTHER EROSION OF THE BASE NUCLEAR WEAPONS PROGRAM, AND BOTH ARE ESSENTIAL, ESPECIALLY IN LIGHT OF BOTH WHAT WE DO KNOW AND WHAT WE DON'T KNOW ABOUT THE SOVIET PROGRAM.

(U) THIS YEAR'S DOE BUDGET REQUEST, IF FULLY APPROVED, IS BARELY ADEQUATE TO SUPPORT THE NUCLEAR WEAPONS PROGRAM, AND THUS DESERVES THIS COMMITTEE'S FULLEST SUPPORT. BECAUSE OF THE MARGINALITY OF THE PROGRAM, I BELIEVE WE MUST LOOK FARTHER IN THE FUTURE. THERE ARE MANY CONSIDERATIONS, BUT LET ME NARROW DOWN TO TWO CONCRETE ITEMS.

(U) IN THE AREA OF RESEARCH AND DEVELOPMENT, THE DOD/DOE LONG RANGE RESOURCE PLANNING GROUP (STARBIRD STUDY) RECOMMENDED, IN 1980, A FIFTEEN PERCENT INCREASE IN R&D MANPOWER FROM 7400 IN 1980 TO 8500. PROGRESS IN ACHIEVING THIS OBJECTIVE IS CONTINUING, REACHING 8150 IN 1985, AND PLANNED TO REACH 8400 IN 1986. HOWEVER, THE STARBIRD STUDY DID NOT ANTICIPATE THE INCEPTION OF A NEW PROGRAM, THE PRESIDENT'S STRATEGIC DEFENSE INITIATIVE (SDI), IN WHICH THE DEPARTMENT OF ENERGY HAS A SIGNIFICANT ROLE WHICH CONSTITUTES AN UNFORESEEN EXPANSION OF ITS ONGOING RESPONSIBILITIES. IN ORDER FOR DOE TO SUPPORT THIS ESSENTIAL ACTIVITY, THE LEVEL OF EFFORT IN THE CORE PROGRAM HAS ACTUALLY DECREASED IN THE LAST FEW YEARS; THIS LOSS DIRECTLY IMPACTS THE DOD BY REDUCING DEVELOPMENT ACTIVITIES FOR OUR FUTURE WEAPON SYSTEMS. THEREFORE, I FEEL THAT THE STARBIRD STUDY MANPOWER GOAL OF 8500, TO BE CONSISTENT WITH THE INITIATION OF SDI, SHOULD BE INCREASED SUBSTANTIALLY, PERHAPS TO AROUND 9500 IN ORDER TO MAINTAIN PROPER ATTENTION TO THE CORE PROGRAM. I MIGHT NOTE THAT, FOR COMPARISON, SINCE THE LATE 1970'S, THE INCREASE IN THE CORRESPONDING DOD NUCLEAR WEAPON RDT&E HAS BEEN NEARLY TWICE THE INCREASE IN THE DOE DEFENSE PROGRAMS RD&T. FINALLY, I BELIEVE THAT, TO BEGIN TO BUILD A RESILIENT POSITION FOR PLUTONIUM AND TRITIUM PRODUCTION, AN ISOTOPE SEPARATION CAPABILITY MUST BE PUT IN PLACE AS SOON AS POSSIBLE.

(U) THAT CONCLUDES MY FORMAL TESTIMONY. THE MILITARY LIAISON COMMITTEE MEMBERS, REPRESENTING THEIR MILITARY DEPARTMENTS, AND I WOULD BE HAPPY TO ANSWER QUESTIONS.

STATEMENT ON

DOE RESEARCH IN THE STRATEGIC DEFENSE INITIATIVE PROGRAM

BY

LIEUTENANT GENERAL JAMES A. ABRAHAMSON
DIRECTOR, STRATEGIC DEFENSE INITIATIVE ORGANIZATION

BEFORE THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

MARCH 17, 1986

MR.CHAIRMAN IT IS A PLEASURE TO APPEAR BEFORE THE COMMITTEE TO DISCUSS WITH YOU THE STRATEGIC DEFENSE INITIATIVE (SDI) AND THE IMPORTANCE OF THE DEPARTMENT OF ENERGY'S (DOE) ROLE IN THE SDI RESEARCH PROGRAM. THREE YEARS AGO PRESIDENT REAGAN EXPRESSED THE CONVICTION THAT FREE PEOPLE SHOULD LIVE SECURE IN THE KNOWLEDGE THAT THEIR SECURITY DID NOT REST UPON THE THREAT OF RETALIATION TO DETER A SOVIET NUCLEAR ATTACK. AT THAT TIME HE DESCRIBED THE THREAT POSED BY INCREASING SOVIET NUCLEAR ARSENALS, AND HE PROPOSED BOLD STEPS, EMBODIED IN A NEW INITIATIVE, TO ADDRESS THAT THREAT. THIS INITIATIVE CALLED FOR A COMPREHENSIVE AND INTENSIVE RESEARCH PROGRAM TO PURSUE THE ADVANCES IN TECHNOLOGY THAT HAVE THE POTENTIAL FOR STRENGTHENING DETERRENCE BY INTRODUCING A DEFENSIVE COMPONENT TO OUR DETERRENT POSTURE.

THE GOAL OF THE SDI IS TO CONDUCT A VIGOROUS PROGRAM OF RESEARCH ON EMERGING TECHNOLOGIES IN SEARCH OF A BETTER BASIS FOR A CREDIBLE DETERRENCE AND STRENGTHEN THE STABILITY OF PEACE THROUGH STRATEGIC DEFENSE. WE ENVISION THAT SUCH A PURSUIT WILL OFFER INCENTIVES TO THE SOVIET UNION TO JOIN WITH US TO REDUCE SIGNIFICANTLY OR EVEN ELIMINATE BALLISTIC MISSILE FORCES. THE DOE IS HELPING US SUPPORT THIS GOAL IN TWO BASIC WAYS.

FIRST, THERE IS REIMBURSABLE SUPPORT TO DOE LABORATORIES FOR PERFORMING DIRECT SDIO MISSION ORIENTED WORK. EXAMPLES OF THIS WOULD BE THE RESEARCH ON THE FREE ELECTRON LASER (FEL) CONDUCTED AT THE LAWRENCE LIVERMORE NATIONAL LABORATORY AND THE NEUTRAL

PARTICLE BEAM EXPERIMENTS AT THE LOS ALAMOS NATIONAL LABORATORY. THE SECOND CATEGORY IS A DOE-FUNDED SUPPORT THAT FALLS WITHIN ITS CLASSIC ROLE OF NUCLEAR WEAPONS RESEARCH.

THE PRESIDENT HAS MADE IT CLEAR THAT HIS GOAL IS FOR SDIO TO INVESTIGATE A DEFENSIVE SYSTEM BASED LARGELY ON NON-NUCLEAR TECHNOLOGY. THE FACT THAT SDIO IS SUPPORTING SOME MODERATE LEVEL OF EFFORT IN A NUCLEAR PROGRAM MAY AT FIRST APPEAR AS A PARADOX. IT IS NOT, AND I WILL CLEARLY EXPLAIN OUR NEED FOR DOE WORK AND KNOW-HOW LATER IN MY TESTIMONY. FIRST, HOWEVER, LET ME DEFINE THE SDI MISSION.

THE MISSION GIVEN TO ME BY PRESIDENT REAGAN WAS TO PROVIDE BY THE EARLY 1990's THE DATA BASE REQUIRED TO MAKE AN INFORMED DECISION, ON THE TECHNICAL FEASIBILITY OF DEPLOYING A BALLISTIC MISSILE DEFENSE SYSTEM, THAT COULD ENHANCE THE SECURITY OF BOTH THE UNITED STATES AND HER ALLIES. FOR SUCH A DEFENSE SYSTEM TO BE USEABLE, IT MUST CONFORM TO RATHER STRINGENT STANDARDS. IT MUST BE SURVIVABLE, ROBUST, AND COST-EFFECTIVE-AT-THE-MARGIN. SUFFICE IT TO SAY SURVIVABILITY IS VERY HIGH ON OUR AGENDA. TO DEVELOP SURVIVABLE SYSTEMS ONE MUST HAVE A REALISTIC GRASP OF POSSIBLE SOVIET RESPONSES OR COUNTERMEASURES TO ANY BALLISTIC MISSILE DEFENSE SYSTEM WE MIGHT DEPLOY. TO ADDRESS THIS, SDI HAS SET UP, THROUGH ITS COUNTERMEASURES OFFICE, TWO TYPES OF SO-CALLED "RED TEAMS". A SET OF TECHNICAL RED TEAMS ARE USED TO CHALLENEG THE DESIGNS OF SPECIFIC DEVICES OR SYSTEMS, SUCH AS THE BOOST-PHASE SENSOR AND TRACK SYSTEM (BSTS). THE BLUE TEAM DOING THE ACTUAL DESIGN MUST THEN RESPOND TO THIS POSTULATED, YET

TECHNICALLY REALISTIC SOVIET COUNTEMEASURE. ANOTHER TYPE OF RED TEAM IS A "SOVIET" RED TEAM. IT WOULD TAKE US FAR AFIELD OF TODAY'S AGENDA TO GO INTO DETAIL ABOUT THE SPECIFICS OF HOW THESE RED TEAMS OPERATE AND IMPACT SDI SYSTEM DESIGNS AND ARCHITECTURES. WHAT IS IMPORTANT FOR TODAY'S HEARING IS THAT ANY SOVIET SYSTEM CAPABLE OF DESTROYING OR SEVERLY DEGRADING A U.S.BALLISTIC MISSILE DEFENSE SYSTEM MUST BE STUDIED VERY CAREFULLY AND IN GREAT TECHNICAL DETAIL. THE NUCLEAR DIRECTED ENERBY CONCEPTS IN GENERAL AND THE X-RAY LASER IN PARTICULAR, AS A COUNTER DEFENSIVE THREAT, FALLS SQUARELY INTO THIS CATEGORY.

THE SOVIETS HAVE BASICALLY THREE POSSIBLE RESPONSES TO OVERCOME A BALLISTIC MISSILE DEFENSE SYSTEM AND THEREFORE TRY TO ASSURE THE MILITARY OBJECTIVES OF A FIRST STRIKE ATTACK. THEY COULD TRY TO OVERWHELM OR SATURATE OUR DEFENSE BY BUILDING A WHOLE NEW FLEET OF FAST BURNING MISSILES, PROBABLY AT VERY GREAT COST. THEY COULD ATTEMPT TO DECOY OUR DEFENSIVE SYSTEM SO THAT WE COULD NOT EASILY FIND THEIR REAL RV's. THIS CAN BE COUNTERED BY USE OF INTERACTIVE DISCRIMINATION SCHEMES SUCH AS NEUTRAL PARTICLE BEAMS, AND/OR X-RAY LASERS, AND KINETIC ENERGY METHODS. FINALLY, THE MOST COST-EFFECTIVE METHOD, AT LEAST TO INITIATE A STRIKE, WOULD BE TO DIRECTLY ATTACK OUR DEFENSIVE SPACE-BASED ASSETS.

WITH THESE FACTORS IN MIND, ONE CAN MORE EASILY UNDERSTAND THE ROLE THAT NUCLEAR RESEARCH PLAYS IN BALLISTIC MISSILE DEFENSE. THESE REASONS HAVE BEEN OUTLINED JOINTLY BY SECRETARY WEINBERGER AND SECRETARY HERRINGTON AND ARE STATED BELOW.

1. TO DETERMINE THE FEASIBILITY AND EFFECTIVENESS OF COUNTERDEFENSIVE NUCLEAR-DRIVEN SYSTEMS THAT AN ADVERSARY MAY DEVELOP FOR USE AGAINST FUTURE U.S. SURVEILLANCE AND DEFENSIVE SYSTEMS.

2. TO UNDERSTAND THE TECHNICAL FEASIBILITY AND IMPACT THAT SUCH CONCEPTS MIGHT HAVE ON OUR DETERRENT FORCES IF UTILIZED IN SOVIET DEFENSIVE SYSTEMS.

3. TO EXPLORE NUCLEAR DIRECTED ENERGY OPTIONS AS BALLISTIC MISSILE DEFENSE POSSIBILITIES IF NEEDED.

ONE SHOULD RECOGNIZE THAT SDI IS A PROGRAM THAT IS FULLY COMPLIANT WITH THE VARIOUS TREATIES (INCLUDING THE 1972 ABM TREATY ENTERED INTO BY THE UNITED STATES AND THE SOVIET UNION). HOWEVER, THE PRESIDENT HAS DIRECTED THAT THE PROGRAM EMPHASIZE NON-NUCLEAR DEFENSIVE SYSTEMS. CLEARLY, THE SOVIETS ARE UNDER NO SUCH CONSTRAINT ABOUT PURSUING SUCH RESEARCH, OR USING NUCLEAR WEAPONS OR NUCLEAR DIRECTED ENERGY WEAPONS (NDEWs) IN THEIR DEFENSE SYSTEMS. THE CURRENT ANTIBALLISTIC MISSILE (ABM) SYSTEM NOW DEPLOYED AROUND MOSCOW USES NUCLEAR WARHEADS. THE SOVIETS HAVE DONE RESEARCH ON NDEW -- SOME EARLIER THAN OUR OWN. BECAUSE OF THIS, A PARTICULARLY IMPORTANT ASPECT OF OUR RESEARCH ON NDEW IS TO UNDERSTAND ITS FEASBILITY IN COUNTERING UNITED STATES RETALIATORY FORCES, AND IN A COUNTERDEFENSIVE MODE AS IT MIGHT BE USED BY THE SOVIETS TO DESTROY SPACE-BASED ELEMENTS OF UNITED

STATES SURVEILLANCE SYSTEMS AND A FUTURE UNITED STATES STRATEGIC DEFENSE SYSTEM.

ALSO, NDEWs MAY BE USEFUL AS PART OF A FUTURE BALLISTIC MISSILE DEFENSE SYSTEM. A NDEW WOULD USE A NUCLEAR EXPLOSION TO POWER NARROW, INTENSE BEAMS OF ENERGY IN SELECTED DIRECTIONS TO DESTROY ATTACKING MISSILES OR REENTRY VEHICLES AT DISTANCES HUNDREDS OR THOUSANDS OF MILES IN SPACE. IN CONTRAST TO THE APPROACHES OF SOME EARLY ABM SYSTEM DESIGNS, WHICH USED TRADITIONAL NUCLEAR WEAPONS, THERE WOULD BE FAR FEWER EXPLOSIONS AND THEY WOULD BE IN SPACE, SO THAT WE WOULD EXPECT NO DAMAGE TO PEOPLE OR STRUCTURES ON THE GROUND. A NDEW MIGHT BE GROUND-BASED AND POPPED UP INTO SPACE AS NEEDED RATHER THAN BASED IN SPACE.

IN SUMMARY, THE SDI RESEARCH PROGRAM HAS ALWAYS CONTAINED EFFORTS CARRIED OUT JOINTLY BY THE DEPARTMENT OF DEFENSE AND THE DEPARTMENT OF ENERGY TO EXPLORE THE TECHNICAL FEASIBILITY OF NDEW. IN THE PAST, FUNDING FOR NDEW HAS BEEN APPROXIMATELY 10-15 PERCENT OF THE TOTAL SDI BUDGET. DOD AND DOE ARE SEEKING INCREASED FUNDING FOR NDEW RESEARCH, BUT THIS WILL NOT EXCEED THE USUAL PORPORTION, SINCE THE ADMINISTRATION IS ALSO SEEKING FUNDING TO INCREASE THE OVERALL SDI RESEARCH.

THE SDIO REQUESTS THAT CONGRESS CONTINUE TO SUPPORT THE DOE REQUESTS TO ALLOW THE COMPLETION OF CRITICAL FEASIBILITY TESTS IN TIME TO IMPACT OUR DECISION TIME FRAME.

AS PART OF THIS SUPPORT, I REQUEST THAT THE CONGRESS ASSIST US IN PROVIDING A FUNDS TRANSFER BETWEEN SDIO AND DOE TO ALLOW US TO HAVE CONSISTENT RESEARCH MILESTONES. A DISCUSSION OF THIS SPECIFIC ISSUE IS PROVIDED IN APPENDIX A.

APPENDIX A

RECENTLY, THE PRESIDENT TRANSMITTED A MESSAGE TO CONGRESS PROPOSING THE TRANSFER OF $62 MILLION FROM THE DEPARTMENT OF DEFENSE TO THE DEPARTMENT OF ENERGY IN FISCAL YEAR 1986 TO ACCELERATE RESEARCH ON NUCLEAR DIRECTED ENERGY CONCEPTS. THE PURPOSE OF THE LETTER WAS TO EMPHASIZE THE URGENCY OF THIS PROPOSED ACTION, PROVIDE SUPPORTING INFORMATION, AND REQUEST YOUR ASSISTANCE IN EFFECTING THIS FUNDING TRANSFER.

IN THE PAST SEVERAL MONTHS, OUR KNOWLEDGE AND UNDERSTANDING OF NUCLEAR DIRECTED ENERGY TECHNOLOGY HAS ADVANCED SIGNIFICANTLY. THIS KNOWLEDGE HAS INCREASED THE IMPORTANCE OF THE NUCLEAR DIRECTED ENERGY RESEARCH TO THE NATIONAL STRATEGIC DEFENSE INITIATIVE PROGRAM. OUR NEW UNDERSTANDING IS A RESULT OF THE SIGNIFICANT PROGRESS MADE IN THE NUCLEAR DIRECTED ENERGY TECHNOLOGY AND THE RESULTS OF SDI ARCHITECTURE STUDIES WHICH SHOWED THE DRAMATIC IMPACT, ESPECIALLY IN THE THREAT AREA, THAT AN ADVERSARY'S NUCLEAR DIRECTED ENERGY WEAPON NDEW COULD HAVE ON NATIONAL SECURITY. IT IS VITAL THAT THE DEPARTMENT OF ENERGY'S LEVEL OF EFFORT ON SDI RESEARCH BE INCREASED DURING FISCAL YEAR 1986 AND BEYOND SO THAT THE FEASIBILITY AND SIGNIFICANCE OF THIS TECHNOLOGY, PARTICULARLY THE POTENTIAL THREAT IT POSES IF DEVELOPED BY THE SOVIETS, CAN BE PROPERLY CONSIDERED IN FUTURE STRATEGIC DEFENSE INITIATIVE PROGRAMMATIC DECISIONS. IT IS ESSENTIAL THAT THIS TECHNOLOGY BE SYNCHRONIZED WITH THE EXPECTED MATURATION OF SDI TECHNOLOGY DEVELOPMENTS.

OTHERWISE, PROGRAMMATIC DECISIONS WILL BE BASED ON INADEQUATE UNDERSTANDING OF NUCLEAR DIRECTED ENERGY FEASIBILITY.

TO KEEP PACE WITH SDI TECHNOLOGY DEVELOPMENT, THE $62 MILLION TO BE TRANSFERRED TO THE DEPARTMENT OF ENERGY WILL BE USED TO ACCELERATE NDEW RESEARCH TO DETERMINE THE TECHNICAL FEASIBILITY AND THE PERFORMANCE PARAMETERS OF NDEW CONCEPTS. THIS DETERMINATION WILL PROVIDE DATA AND EXPERIMENTAL CAPABILITY TO THE DEPARTMENT OF DEFENSE TO ASSESS SOVIET DEFENSIVE AND COUNTER-DEFENSIVE THREAT CAPABILITY AS SOON AS POSSIBLE, BUT NO LATER THAN THE EARLY 1990's -- A DATE AT WHICH WE BELIEVE MANY CRITICAL SDI TECHNOLOGIES WILL BE COMING TO MATURITY. THIS INFORMATION IS CRITICAL TO THE ARCHITECTURE OF A POTENTIAL UNITED STATES STRATEGIC DEFENSE SYSTEM.

TO AVOID ANY INCREASE IN THE FEDERAL DEFICIT, THE DEPARTMENT OF DEFENSE IS MAKING $62 MILLION AVAILABLE FROM WITHIN THEIR OVERALL FISCAL YEAR 1986 SDI BUDGET OF $2,759 MILLION. I WOULD APPRECIATE YOUR PROMPT CONSIDERATION AND APPROVAL OF THE PRESIDENT'S REQUEST.

46(1)

STATEMENT OF
Major General George K. Withers, Jr., USA
Deputy Assistant Secretary for Military Application
FY 1987 Appropriations Hearings

March 17, 1986

Mr. Chairman, members of the committee, it is a pleasure to appear before you again to testify in support of the Department of Energy's Atomic Energy Defense Activities' budget request.

MISSION OF THE NUCLEAR WEAPONS PROGRAM

The mission of the nuclear weapons program is to support the Nation's nuclear deterrent. This involves the maintenance and modernization of the nuclear weapons stockpile and a strong nuclear research, development, and testing program. Additionally, we must continue to define the threat posed by nuclear directed energy weapon concepts as part of the President's Strategic Defense Initiative. The enabling legislation for the nuclear weapons program is the Atomic Energy Act of 1946, as amended.

FY 1986 ACCOMPLISHMENTS

In FY 1986, we anticipate accomplishing the following objectives:

- Meet all assigned nuclear weapon production, retrofit, and retirement objectives.

- Initiate major management improvements to more effectively develop, report, manage, and control weapon system costs.

- Produce and deliver DELETED warheads to the Department of Defense.

- Apply Computer Aided Design/Computer Aided Manufacturing techniques to shorten weapon development and reduce manufacturing costs.

- Demonstrate electronic transfer of design over wideband communication network.

- Conduct three emergency response exercises.

- Complete 23 construction projects.

- Complete Short Range Attack Missile II (SRAM II) and Small Intercontinental Ballistic Missile (SICBM) Phase 2 studies; complete Phase 2A on Antisubmarine Warfare/Standoff Weapon (ASW/SOW) Sea Lance; initiate Phase 2A on Antisubmarine Warfare Nuclear Depth/Strike Bomb (ASW/NDB); enter Phase 4 on the W88; and begin production on the W87.

- o
- o

DELETED

- o
- o
- o Complete and test fire Particle Beam Fusion Accelerator II.
- o Demonstrate record neutron production with the NOVA experimental inertial fusion facility.
- o
- o

DELETED

o

DELETED

o Demonstrate lasing and gain for the krypton fluoride and xenon fluoride optical laser (Perseid) program.

FY 1987 BUDGET CONSIDERATIONS

Several factors influenced the development of the FY 1987 budget. Specifically considered were the budget deficit, defense function planning, weapons program mission, and our investment strategy. The objectives of the Balanced Budget and Emergency Deficit Control Act of 1985 (Gramm-Rudman-Hollings) require the Administration to refine its defense function planning. Toward that end, we have worked closely with the Department of Defense and the Office of Management and Budget to support vital national security requirements within funding constraints. To carry out our mission, we have developed an investment strategy for the next five years (Chart 1).

INVESTMENT STRATEGY

Our investment strategy for achieving the weapons program goals and mission has been modified to incorporate the objectives of the Balanced Budget and Emergency Deficit Control Act of 1985. The FY 1987 budget includes an increase of roughly 9 percent real growth and 4 percent escalation between FY 1986 and FY 1987. Given the impact of the reductions related to the Balanced Budget and Emergency Deficit Control Act, this increase is critically necessary to support vital national security requirements for which the Department of Energy is responsible. The outyear funding profile for the nuclear weapons program provides a more moderate real growth on the order of about 3 percent annually for the period FY 1988-FY 1991.

MAJOR THRUST OF FY 1987 BUDGET REQUEST

The FY 1987 budget request (Charts 2 and 3) which totals approximately $4.7 billion supports the Nuclear Weapons Stockpile Memorandum and the critical milestones of the President's Strategic Defense Initiative. This request also reflects the Secretary of Energy's priorities of assuring facilities and materials are secure and safe from potential adversary actions and that environment and safety concerns are quickly detected and corrected in a responsible and cost efficient manner. Our FY 1987 request takes into consideration the impact of the Gramm-Rudman-Hollings reductions on the weapons program.

WEAPONS PRODUCTION AND SURVEILLANCE

The Weapons Production and Surveillance program supports the fabrication and assembly of nuclear weapons and weapon components, and stockpile maintenance and reliability assessment. These activities are conducted in concert with the Department of Defense, according to the force structure and schedules approved annually by the President. The production and surveillance activities are supported by a decentralized, nationwide complex of Government-owned, contractor-operated facilities.

The request supports production operations for eight weapon systems and two major modification programs (Chart 4). Preproduction activities are underway for eleven warheads *DELETED* The request for Production and Surveillance operating expenses total about $2 billion, an increase of $229 million representing a real increase of 8.6 percent over FY 1986.

This level of real growth in FY 1987 is a function of reductions taken in FY 1986 to implement the provisions of the Balanced Budget and Emergency Deficit Control Act of 1985. The legislation required a reduction of $104.6 million, about 5 percent, from the FY 1986 budget, *DELETED* Reductions of about $70 million were assessed across production support activities.

DELETED

These changes are not reflected in the FY 1987 budget request, which was completed prior to the assessment of the Gramm-Rudman-Hollings reductions. While this has caused the appearance of a disconnect between the two years, such a disconnect does not exist because of the nature of the reductions we have taken.

DELETED

the resources needed to accomplish the same amount of work--the recovery--will not diminish; rather, requirements are simply deferred from FY 1986 to later years. Many of the FY 1986 requirements are deferred only until FY 1987, which offsets any savings from adjusted FY 1987 production schedules.

DELETED

Production support activities were already reduced substantially in FY 1986 as a result of appropriations being enacted at a lower level than requested. To adjust to reduced appropriations without affecting weapon delivery schedules, about $100 million was reduced by deferring materials and tooling procurements, deferring plant maintenance, delaying preproduction activities for systems coming into production in the late 1980's, and postponing productivity enhancement initiatives. An additional $70 million was reduced from these areas as a result of Gramm-Rudman-Hollings.

DELETED

Even with a decreased near-term workload,

DELETED

while also beginning production on a variety of important new weapons systems. These systems include the W88 TRIDENT II, W81 Standard Missile-2, W82 155 millimeter Artillery Fired Atomic Projectile, Antisubmarine Standoff Weapon, Small Intercontinental Ballistic Missile, Antisubmarine Warfare Nuclear Depth Bomb, and Short Range Attack Missile II. I believe it is crucial that the Department of Energy's nuclear weapons complex be in the strongest possible position to meet the

Department of Defense's workload requirements in the 1990's. Recovering as quickly as possible from the FY 1986 budgetary reductions is essential to attaining this position.

We have examined the FY 1987 budget request in light of this changed situation. Savings from workload adjustments are estimated to total about $85 million in FY 1987. This is more than offset by the high priority requirements to: procure materials and tooling associated with specific systems which were deferred to achieve FY 1986 savings; restore momentum lost in FY 1986 on preproduction activities for important systems including TRIDENT II, Antisubmarine Standoff Weapon, W82 155 millimeter Artillery Fired Atomic Projectile, and Short Range Attack Missile II to protect initial operating capability dates; reinstate scheduled productivity initiatives; and, in addition, perform critical plant maintenance activities deferred from FY 1986.

RESEARCH, DEVELOPMENT, AND TESTING

The FY 1987 request of $1.7 billion for research, development, and testing operating expenses will enable the Department to pursue the traditional technology base activities including those related to the Strategic Defense Initiative, weaponization, and Inertial Fusion (Chart 5).

TECHNOLOGY BASE

The Inertial Fusion program conducted at the weapons laboratories will be integrated into the technology base portion of the overall weapons research and development program and, therefore, will no longer be funded as a separate program. This action has been taken in recognition of the contribution the Inertial Fusion program continues to make to weapons research. Inertial Fusion research will compete for resources with other weapons technology base research on a technical merit basis. That is to say, the research will be evaluated in terms of scientific value to the weapons program and its probability of success. This prioritization is necessary because there are not sufficient resources to do everything. The effort conducted by the non-Department of Energy laboratories which have included the University of Rochester, KMS Fusion, and the Naval Research Laboratory will be maintained at the current level of effort.

The more traditional technology base activities will continue at roughly the same level of effort as in FY 1986. Those activities provide the fundamental scientific and engineering data base and facility capabilities upon which this Nation's nuclear weapons research, development, engineering, and certification efforts are based. The primary emphasis in this area is on providing an inventory of proven ideas and concepts for timely and effective application to evolving Department of Defense system requirements; the conduct of basic studies in unique areas of physics, mathematics, chemistry, and the engineering sciences that will provide tomorrow's advances in nuclear weapons technology; and the maintenance of a central core of facilities and capabilities unique to nuclear weapon design. The Department of Energy effort in support of the Strategic Defense Initiative which is the major growth area in the budget is also part of this technology base. In FY 1987, approximately $880 million will be devoted to technology base activities compared to $680 million in FY 1986. This will support achievement of strategic defense initiative milestones and maintain required competence in nuclear bomb and warhead technology.

Efforts within the technology base category include advanced concepts, supporting research, and supporting technologies.

The advanced concepts activity develops design concepts and components with potential for future Department of Defense systems applications. Emphasis will continue in areas where exploratory experimentation is expected to provide significant payoffs during the intermediate term. However, increased effort will be expended on investigations of concepts such as directed energy weapons activities having longer term payoffs as well.

Supporting research activities include disciplines that are fundamental to nuclear weapon development. Included under supporting research are most of the disciplines associated with the physical, chemical, mathematical, and engineering sciences.

Supporting technology activities include efforts related to improved utilization of laboratory experimental facilities and capabilities; increased understanding of advanced materials and their potential applications; development of processes to formulate and fabricate new materials; and the development and application of computer codes to understand and interpret the physics of nuclear, laser, microwave, and particle beam devices and to analyze and predict the response of engineering materials and structures to various environments.

During FY 1987, *DELETED* underground nuclear device tests will be conducted at the Nevada Test Site in support of technology base activities other than Strategic Defense Initiatives. These field tests are an integral element in confirming the feasibility and practicality of the ideas and concepts developed in the technology base category and cover a wide range of technology.

DELETED

STRATEGIC DEFENSE INITIATIVE

The research, development, and testing programmatic growth in FY 1987 is dedicated to the President's Strategic Defense Initiative Program (Chart 6). Accelerated strategic defense research is necessary to meet our immediate objective of understanding the potential Soviet capability to design and deploy nuclear directed energy weapons that would put the United States retaliatory force or a future defensive system at risk. This information is necessary as soon as possible for the Strategic Defense Initiative Organization because of the potential impact it could have on current nonnuclear strategic defensive initiative research and planning. Nuclear directed energy weapons are also being researched as United States strategic defense options because of their potential capabilities and as a hedge against the failure of nonnuclear defensive weapons to meet performance requirements.

We know the Soviets have been conducting strategic defense research for some time

DELETED

A measure of Soviet capabilities in nuclear defense research is to first establish our own capabilities in terms of scientific proof of principle and then technical feasibility.

The Department of Energy Defense Programs role involves nuclear directed energy weapons concept research. We are currently conducting research on four broad concepts including x-ray laser, hypervelocity pellets, optical frequency lasers,

DELETED

and particle beams. Supporting research for all of the nuclear directed energy weapons concepts is also conducted. This research includes systems studies; vulnerability, lethality and countermeasures; and new and innovative concepts. The x-ray laser and hypervelocity pellet programs are being pursued on a technology limited pace in FY 1987, and other concepts are accelerated so that an assessment of technical feasibility can be made in the early 1990's.

It is too early to make decisions as to which nuclear directed energy weapons concepts are technically feasible. We strongly recommend continuing research on all present concepts. As research proceeds, the various concepts will be continually reviewed relative to projected adversary military utility and likelihood of technical success. The pace of the research is based on the technical feasibility milestones established by the Strategic Defense Initiative Organization to assess threat as soon as possible but no later than the early 1990's.

DELETED

APPROPRIATION TRANSFER

The Administration is planning an appropriation transfer of $62 million from the Department of Defense to the Department of Energy to assess Soviet nuclear directed energy weapons capability to attack our current nuclear deterrent and a potential strategic defense system. This transfer would accelerate the x-ray laser and hypervelocity pellets programs in FY 1986 to a technology limited pace.

In addition, other concepts such as microwaves, optical lasers, and particle beams would be conducted at a level that would meet Strategic Defense Initiative Organization milestones for technical feasibility assessments in the early 1990's.

DEVELOPMENT, ENGINEERING, AND CERTIFICATION

The second major area of activity is weapons development, engineering, and certification. This effort is guided by current national requirements for providing new strategic nuclear weapon options, for modernizing tactical nuclear weapons, and for monitoring and maintaining the reliability of all nuclear weapons now in stockpile. All Phase 3 development engineering requests are transmitted by the Department of Defense to the Department of Energy through the Military Liaison Committee.

Weapons development, engineering, and certification activities for weapons systems that will be in at least Phase 3 in FY 1987 will include: The W81 nuclear warhead for the Navy's Standard Missile-2 which will provide a defensive capability against nuclear-armed air, surface, and submarine launched cruise missile threats. *DELETED* The AEGIS system will accommodate the nuclear Standard Missile-2.

The W82 warhead is being developed in a non-enhanced radiation version as a replacement for the obsolescent W48 as part of the Army's Artillery Fired Atomic Projectile modernization program. This warhead will have better range, accuracy, and reliability than the W48 *DELETED*

The W87 warhead, *DELETED* is being designed to incorporate insensitive high explosive, improved fire resistance, and other enhanced safety features for application in the PEACEKEEPER system.

The W88 warhead, or TRIDENT II warhead, is being developed to provide a high yield capability *DELETED* for the Sea Launched Ballistic Missile force. The warhead/reentry body combination is a new design to provide enhanced capability.

The Antisubmarine Warfare/Standoff Weapon will be a new depth bomb replacement for the current Submarine Launched Antisubmarine Rocket. *DELETED*

The Antisubmarine Standoff Weapon Nuclear Depth Bomb will be a new air-dropped, dual purpose replacement for the B57 and some B61 Mods for the United States Navy. *DELETED*

The Small Intercontinental Ballistic Missile will be a small single warhead Intercontinental Ballistic Missile in one or several basing modes with emphasis on mobility. The *DELETED* *DELETED* warhead is to be compatible with the MK-21 reentry vehicle developed for the PEACEKEEPER program.

DELETED

Weapons development, engineering, and certification efforts also include stockpile improvement, future weapons, and stockpile management. The stockpile improvement effort is intended to extend the stockpile life of existing weapons by incorporating technical improvements such as insensitive high explosives. These improvements are a cost-effective alternative to replacement of existing weapons. Future weapon efforts cover pre-Phase 1, Phase 1, Phase 2, and Phase 2A studies of nuclear weapon systems. Stockpile management includes a small research and development effort in support of production and monitoring of the stockpile.

TESTING CAPABILITIES

This category encompasses those activities necessary to maintain and enhance capabilities for conducting nonnuclear laboratory and field experiments and for conducting underground nuclear device tests at the Nevada Test Site. Included in this category are efforts directed toward improving the technology in all areas of testing, insuring that all nuclear device tests are executed in a safe and environmentally acceptable manner, maintenance and operation of the Nevada Test Site, provision of logistical support to the laboratories and other technical organizations that participate in test activities at the Nevada Test Site, and preparatory activities for future testing at the Nevada Test Site.

In FY 1987 the emerging needs of the Strategic Defense Initiative program will continue to be a challenge for the Nevada Test Site staff and facilities. The complexity of some of the Strategic Defense Initiative testing and the need to develop new and better types of diagnostic support will continue to stress resources.

SPECIAL PROJECTS AND MARSHALL ISLANDS

The remainder of the traditional research, development, and testing program consists of miscellaneous tasks related to or flowing from the primary mission of providing the necessary technology to support weapon requirements. The most significant efforts in this area include research and development efforts related to improved hardware, systems, and procedures for the protection of nuclear weapons and strategic quantities of special nuclear material during shipment and storage; the operational costs associated with maintenance of the Department of Energy's Nuclear Emergency Search Team (NEST) capabilities located at Las Vegas, Nevada, and Andrews Air Force Base, Maryland; and research efforts directed toward the development of improved search and detection systems and techniques. This category also contains the funding for Federal employment and related services in direct support of the research, development, and testing effort. The Marshall Islands Environmental Program includes costs incurred in carrying out the Department's health and environmental obligations and responsibilities with respect to residual studies relating to the United States nuclear weapons atmospheric testing program, primarily in the Marshall Islands.

Overall, the traditional program will operate at about the same level of effort in FY 1987 as in FY 1986, with the Strategic Defense Initiative program being the area of growth.

PROGRAM DIRECTION

The program direction activity (Chart 7) provides for the Federal oversight of the weapons program and community assistance at Los Alamos, New Mexico. Overall employment will increase by 12 full-time equivalents in FY 1987.

PLANT & CAPITAL EQUIPMENT

We are requesting $911.4 million for plant and capital equipment, of which $588.5 million will be for construction of facilities. With the exception of two new projects associated with weapons production, the new construction projects are related to upgrading the physical security of our plants and to complying with environmental, safety, and health statutory or regulatory requirements.

PROGRAMMATIC CONSTRUCTION PROJECTS

The FY 1987 budget request includes $212.6 million for construction projects directly related to supporting our programmatic mission of designing, developing, and producing nuclear weapons. As presented in this chart (Chart 8), only $5.5 million of this amount is included for initiating construction of two new projects in FY 1987. The first of these projects is to provide production facilities for the Short Range Attack Missile warhead. Funding of $5.0 million is required in FY 1987 to begin facility design and engineering of this $55 million facility. The other new project is a production support facility required to provide a new protective clothing decontamination facility at Rocky Flats. In FY 1987, $.5 million is required to initiate construction of this $5.2 million facility.

The remaining $207.1 million of programmatic construction project funding is required to continue ongoing construction activities of 13 projects. These include eight production and production support projects totalling $160.2 million and five research and development projects totalling $46.9 million (Chart 9).

The postponement of new programmatic construction in FY 1987 is necessary to accommodate other urgent operating and equipment requirements. It is our intention in the FY 1988-FY 1991 period to provide for new programmatic construction within the overall planning of 3 percent real growth.

RESTORATION

Within the weapons program we have two initiatives that are vital to a modernized nuclear weapons complex. One is the restoration program and the other is the research, development, and testing facilities revitalization program. Each of these addresses a unique requirement which maintains the scientific and technical advantage of the nuclear weapons complex.

The restoration program was established because we did not spend the money we should have to maintain our facilities during the 1970's. We found ourselves in the same position as a homeowner who did not spend the amount necessary each year to maintain his furnace, which is his only source of heat. The furnace keeps putting out the heat year after year, even though the fan motor is not lubricated like it should be and the fuel nozzles get a little clogged because they are not cleaned. Sooner or later the furnace is going to fail because it was neglected.

Instead of small, periodic bills to maintain it, the homeowner is faced with a single, large bill to replace the entire system. That is where we found ourselves at the end of the 1970's. Our utility systems and our equipment were beginning to fail because we neglected them. Just as a furnace is critical to providing heat in the winter, so too our equipment and utilities are essential if we are to do our job. We are now faced with replacing the worn out items of the 1970's. At the same time, we need additional funds in the form of general plant projects and basic capital equipment to provide for the orderly and timely replacement of equipment and utility systems which are wearing out now.

The budget must be tight if we are going to see the reduction and elimination of the Federal deficit, and we have done our best to identify those items whose replacement can be deferred another year. We are requesting $29.0 million for research, development, and testing general plant projects and $32.0 million for the production and surveillance general plant projects (Chart 10). These amounts represent increases of $1.5 and $3.3 million, respectively, over the FY 1986 request. We are asking for $104.3 million for research, development, and testing basic capital equipment and $114.1 for production and surveillance basic capital equipment, an overall increase of $9.0 million over FY 1986. We are also requesting $116.9 million for the restoration line item, Project 82-D-107, Utilities and Equipment

Restoration, Replacement, and Upgrade, Phase 3, Various Locations. This is a reduction of $35.3 million from the FY 1986 request. Overall, our funding request to support this effort to restore and maintain our capital base is $21.5 million less than in FY 1986.

The other ongoing initiative we have is the revitalization program. This is a multiyear program to improve the facilities and equipment critically needed to conduct our research, development, and testing activities. As in the restoration program, this area was severely underfunded in the 1970's and, as a result, we have had to pay a high price to do without the facilities and equipment provided by the revitalization program. This price is measured in lost efficiency and effectiveness and in operating dollars. We also run an increasing risk that new, sophisticated technology will not be developed, as such technology will be beyond the capability and capacity of our existing plant to exploit and use for the weapons program.

We are requesting $72.9 million to fund projects authorized in prior years to support our revitalization efforts which provide the new capabilities and added capacity to our research, development, and testing complex (Chart 11). We believe that this level of effort is essential if we are to achieve a long-term, high-level, balanced test program, and to achieve and sustain a healthy research and development program.

It is true that the Department has limited its FY 1987 budget request for restoration and revitalization to only the continuation of ongoing construction projects and has not sought the initiation of new revitalization projects and large dollar restoration funding in FY 1987. Both the Department and Congress have recognized that corrective actions in the form of long term capital investment programs are needed to restore, maintain, and upgrade the capital asset base. However, in recognition of the national deficit and the budgetary constraints which we should prudently follow, we have had to restructure our FY 1987 priorities and not fund these programs as fully as we would like. We have made progress in both restoration and revitalization and feel that a temporary shift in funds this year will not jeopardize our long range goals in these programs.

The need for the restoration and revitalization programs strongly exists. They will be pursued as vigorously as possible in the coming years in the context of recognizing the total requirements of the weapons program.

ENVIRONMENTAL, SAFETY, AND HEALTH

Since the formation of the Atomic Energy Commission in 1946, the Office of Military Application has vigorously discharged its responsibilities to ensure the health and safety of weapons program employees, to manage radioactive and other hazardous materials used in the program in a manner that ensures public health and safety, and last, but not least, to protect the environment. Secretary Herrington has established an Assistant Secretary for Environment, Safety, and Health and is fully committed to ensuring all departmental programs are conducted to protect the environment, the public, and the workers' safety and health.

Beginning in the late 1960's, public concerns for protection of the environment for future generations and for the effects of current practices in industrial and municipal waste disposal practices began to increase. These concerns have accelerated during the 1970's and 1980's. More than 50 pieces of Federal environmental safety legislation have some direct effect on the conduct of the Weapons Program and on its budget. Under Executive Order 12088, the head of each agency is responsible for compliance with the applicable pollution control standards and for ensuring that adequate funding is included in the budget to carry out the protection effort. Compliance under the Order means the same substantive, procedural, and other requirements that would apply to a private person or private industry. In implementing the Federal legislation, the Department of Energy provides department-wide policy, guidance, appraisals, and oversight activities, including department-wide prioritization of environmental, safety, and health construction requirements.

While environmental protection concerns currently command the focus of attention, we should not lose sight of the fact that the health and safety of the employees and the public is a major and continuing responsibility whose funds are included under environmental, safety, and health. The health and safety record of the Weapons Program facilities, since the inception of the program, has shown lost time accident and fatality rates that have been consistently lower than that of general industry in the United States. For several decades past, the few fatalities recorded have resulted from falls, electric shock, traffic accidents, and other causes common with general industry. The Department of Energy has provided professional health and safety expertise at all facilities to ensure compliance with departmental guidance. Exposures to radiation or hazardous chemicals exceeding national standards have decreased. The Weapons Program is fully sensitized to the real and perceived consequences of any accident in the nuclear weapons facilities.

During the past few years we have increased environmental compliance manpower. Many of our past practices in the disposal of hazardous wastes, although following previously acceptable industrial practices, have resulted in disposal sites that now may require costly remedial action. As a result, we have implemented a program to identify existing environmental concerns under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Regarding non-radioactive materials, we are characterizing the disposal sites and developing specific contaminant transport models with the objective of determining the extent of the cleanup required. Part of this effort is justified by the need to demonstrate to the state and local authorities that the Department of Energy is complying with environmental regulations. Each of our Operations Offices has a plan to finish the installation of assessment capabilities at each site during FY 1987.

Chart 12 presents a summary of the environmental, safety, and health construction funding included in the Weapons Activities FY 1987 budget request.

SAFEGUARDS AND SECURITY CONSTRUCTION

The FY 1987 request of $69.4 million (Chart 13) includes $4.6 million for the initiation of two new construction projects, one at the Lawrence Livermore National Laboratory and the other at the Pinellas Plant. The balance of $64.8 million continues eight prior-year construction projects at various weapons complex sites. The largest portion of the prior-year request is $30.0 million for site security upgrading at the Y-12 Plant which is a vitally needed project in its third year of funding.

All eight projects are needed since they address multiple identified vulnerabilities that continue to exist in the weapons complex. The security of the weapons complex must not be jeopardized by lack of timely corrective actions for identified vulnerabilities and pursuit of better ways to improve the effectiveness of security and plant operations.

OTHER ISSUES

Before closing, I would like to address two other issues: implementation of the Blue Ribbon Task Group recommendations and productivity initiatives and a comprehensive test ban.

BLUE RIBBON TASK GROUP

As you are aware, the seven member Blue Ribbon Task Group on Nuclear Weapons Program Management reported its findings to the President and the Congress on July 15, 1985. Chairman William Clark reported that the current Department of Defense/Department of Energy relationship is sound, but that management arrangements could be strengthened. Recommendations were made concerning budgetary and planning processes as well as organizational interfaces.

The Secretary of Energy has accorded the implementation of their recommendations a high priority. The Department of Energy has established a Senior Review Group, chaired by the Under Secretary, to lead these efforts, supported by a multi-organization working group. We plan to implement most of the recommendations for the FY 1988 budget cycle. Negotiations have begun between the Departments. Currently, the Senior Review Group is reviewing the Department of Energy plans for implementing the joint recommendations in preparation for more detailed negotiations with the Department of Defense. Some of the Blue Ribbon Task Group recommendations can, and will be, implemented unilaterally by the Department of Energy. Many of these relate to improving our cost management.

I would like to assure the members that cost control continues to be a priority element of our management approach. Attention has been focused throughout the nuclear weapons complex on promoting cost consciousness at all levels of production and assembly. The results have been impressive. Cost savings and cost avoidances throughout the nuclear weapons production complex in 1985 have amounted to $31 million, of which $17 million is a one-time savings and $14 million will be saved every year. While we are committed to cost control, we will never compromise quality for enhanced productivity.

COMPREHENSIVE TEST BAN

Nuclear testing is indispensible to a credible nuclear deterrent. The security of the United States and our Allies currently rests upon a nuclear deterrent which, in turn, requires surveillance for reliability and a robust technology base in order to respond to inevitable changes in the military threat.

We continue to test in order to: develop, weaponize, and certify nuclear weapons for new weapon system applications; evaluate and maintain confidence in the reliability of the Nation's current nuclear stockpile; explore new weapon concepts to provide increased capability and improved safety; increase the understanding of the functioning of nuclear explosives; and investigate the effects of nuclear explosions on military systems.

SUMMARY

In summary (Chart 14), the FY 1987 request fully supports the Presidentially approved Nuclear Weapons Stockpile Memorandum as well as the President's Strategic Defense Initiative program. The Inertial Fusion Program is integrated into the weapons research, development, and testing technology base and continues separate support for the non-Department of Energy laboratories. Funding is provided for an austere continuation of the restoration and revitalization efforts. Provision is also made for those activities and projects necessary to comply with statutory environmental, safety, and health requirements and to enhance security throughout the weapons complex.

In closing, I would like to thank you for your strong support through the years and for the opportunity to appear before you today.

CHARTS REFERENCED BY

GENERAL GEORGE K. WITHERS, JR.

HOUSE APPROPRIATIONS COMMITTEE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

FY 1987 APPROPRIATION HEARING

MARCH 17, 1986

46(2)

CHART 1

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

INVESTMENT STRATEGY

- SUPPORT STOCKPILE MEMORANDUM
- SUPPORT PRESIDENT'S SDI PROGRAM
- HALT EROSION OF TECHNOLOGY BASE
- RESTORE, MAINTAIN, AND REVITALIZE FACILITIES
- PROVIDE ADEQUATE SAFEGUARDS AND SECURITY
- COMPLY WITH ES&H LAWS AND REGULATIONS

PARM:6:017
2/5/86

CHART 2

FY 1987 CONGRESSIONAL SUBMISSION
(DOLLARS IN MILLIONS)

	FY 1985	FY 1986	FY 1987	
	ACTUAL	APPROPRIATION	AUTHORIZATION	APPROPRIATION
RESEARCH AND DEVELOPMENT				
OPERATING	$ 925.1	$ 912.2	$1,067.2	$1,067.2
CAPITAL EQUIPMENT	88.4	91.0	117.6	117.6
CONSTRUCTION	157.9	135.7	114.5	149.8
TOTAL RESEARCH AND DEVELOPMENT	$1,171.4	$1,138.9	$1,299.3	$1,334.6
TESTING				
OPERATING	536.2	501.4	633.8	633.8
CAPITAL EQUIPMENT	43.8	44.2	72.0	72.0
CONSTRUCTION	38.6	21.4	30.4	37.0
TOTAL TESTING	618.6	567.0	736.2	742.8
INERTIAL FUSION				
OPERATING	23.8	22.6	22.5	22.5
CAPITAL EQUIPMENT	1.3	1.3	1.3	1.3
CONSTRUCTION	0	0	0	0
TOTAL INERTIAL FUSION	25.1	23.9	23.8	23.8
PRODUCTION AND SURVEILLANCE				
OPERATING	1,806.3	1,739.8	1,968.5	1,968.5
CAPITAL EQUIPMENT	119.4	125.2	132.0	132.0
CONSTRUCTION	386.0	420.9	346.5	401.7
TOTAL PRODUCTION AND SURVEILLANCE	2,311.7	2,285.9	2,447.0	2,502.2
PROGRAM DIRECTION				
OPERATING	57.5	95.1	60.6	60.6
TOTAL WEAPONS ACTIVITIES	$4,184.3	$4,110.8	$4,566.9	$4,664.0

PARM [illegible]
3/6/86

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

CHART 3

WEAPONS ACTIVITIES PROGRAM OVERVIEW
FY 1987 BUDGET REQUEST

($ IN MILLIONS)

	APPROPRIATION		
	FY 1986	FY 1987	DIFFERENCE
• SUPPORT ALL FIRM NWSM REQUIREMENTS	$1,920.3	$2,134.2	+213.9
• ENHANCE THE RD&T PROGRAM TO SUPPORT SDI AND STOP THE DETERIORATION OF THE TRADITIONAL PROGRAM TECHNOLOGY BASE	1,436.8	1,790.3	+353.5
• SUPPORTING LABORATORIES INERTIAL FUSION PROGRAM	23.9	23.8	− .1
• RESTORE AND MAINTAIN THE CAPITAL ASSET BASE	417.8	396.3	− 21.5
• REVITALIZATION OF RD&T FACILITIES	47.9	72.9	+ 25.0
• ADP PURCHASES	51.0	60.8	+ 9.8
• PROVIDE ADEQUATE SAFEGUARDS AND SECURITY FOR THE DEFINED THREAT	79.8	69.4	− 10.4
• ENSURE THAT THE ENVIRONMENT IS PROTECTED AND SAFETY MAINTAINED	38.2	55.7	+ 17.5
• PROGRAM DIRECTION	95.1	60.6	− 34.5
TOTAL WEAPONS ACTIVITIES	$4,110.8	$4,664.0	+553.2

PARM:6:116
2/19/86

CHART 4

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

WEAPONS SYSTEMS IN PRODUCTION

- B-61-3 BOMB
- B-61-4 BOMB
- W-76 TRIDENT MISSILE WARHEAD
- W-80-0 SEA LAUNCHED CRUISE MISSILE WARHEAD
- W-80-1 AIR LAUNCHED CRUISE MISSILE WARHEAD
- B83 STRATEGIC BOMB
- W84 GROUND LAUNCHED CRUISE MISSILE WARHEAD
- W87 PEACEKEEPER MISSILE WARHEAD

STOCKPILE IMPROVEMENT PROGRAM

- W31 NIKE/HERCULES MISSILE WARHEAD
- B61-1 BOMB CONVERSION TO B61-7

PARM:6:074
2/5/86

CHART 5

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

RESOURCE ALLOCATIONS BETWEEN WEAPONS RD&T CORE AND STRATEGIC DEFENSE INITIATIVE (OPERATING BA $ IN MILLIONS)

	FY 1985	FY 1986	FY 1987
CORE PROGRAM			
FUNDING	$1,246.3	$1,145.7	$1,236.0
DEVICE TESTS		*DELETED*	
(R&D FTE'S)	8,670	8,090	8,000
STRATEGIC DEFENSE INITIATIVE			
FUNDING	$ 215.0	$ 267.9	465.0
DEVICE TESTS		*DELETED*	
(R&D FTE'S)	830	940	1,850
OVERALL TOTAL			
FUNDING	$1,461.3	$1,413.6	$1,701.0
DEVICE TESTS		*DELETED*	
(R&D FTE'S)	9,500	9,030	9,850

PARM:6:034
2/5/86

CHART 6

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

STRATEGIC DEFENSE INITIATIVE FUNDING

($ IN MILLIONS)

	APPROPRIATION	
	1986	1987
STRATEGIC DEFENSE INITIATIVE		
OPERATING EXPENSE	$268	$465
CAPITAL EQUIPMENT	—	56
STRATEGIC DEFENSE FACILITY	2	15
TOTAL	$270	$536

PARM:6:087
2/10/86

CHART 7

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

WEAPONS PROGRAM DIRECTION

($ IN THOUSANDS)

	FY 1986	FY 1987
FEDERAL FTE'S AT HEADQUARTERS, ALBUQUERQUE, AND NEVADA	826	838
FUNDING INCLUDES:		
FEDERAL SALARIES, BENEFITS, OTHER PERSONAL COMPENSATION	$34,946	$36,976
TRAVEL	2,827	3,200
CONTRACTUAL SERVICES	8,482	12,279
SUBTOTAL	46,255	52,455
COMMUNITY ASSISTANCE PAYMENTS		
LOS ALAMOS	7,712	8,095
OAK RIDGE	41,133	0
SUBTOTAL	48,845	8,095
TOTAL WEAPONS PROGRAM DIRECTION	$95,100	$60,550

PARM:6:118
3/6/86

CHART 8

FY 1987 CONGRESSIONAL BUDGET WEAPONS PROGRAMMATIC PROJECTS (DOLLARS IN MILLIONS)

PROJECT	TEC	FY 1986 APPRO-PRIATION	FY 1987 AUTHOR-IZATION	FY 1987 APPRO-PRIATION
PRODUCTION AND PRODUCTION SUPPORT PROJECTS				
87-D-122 SHORT RANGE ATTACK MISSILE (SRAM) II WARHEAD PRODUCTION FACILITIES, VL	55.0	$ 0	$ 5.0	$ 5.0
87-D-123 PROTECTIVE CLOTHING DECONTAMINATION FACILITY, ROCKY FLATS	5.2	0	0.5	0.5
86-D-130 TRITIUM LOADING FACILITY REPLACEMENT, SAVANNAH RIVER	120.0	4.7	29.7	30.0
86-D-112 ENRICHED URANIUM RECOVERY IMPROVEMENTS, Y-12 PLANT	52.0	12.5	19.0	21.8
86-D-113 POWER PLANT AND STEAM DISTRIBUTION SYSTEM, PANTEX	27.2	12.7	1.8	7.6
85-D-115 RENOVATE PU BUILDING UTILITY SYSTEMS, ROCKY FLATS	35.1	16.7	13.4	14.5
85-D-125 TACTICAL BOMB PRODUCTION FACILITIES, VL	35.8	9.0	12.8	14.8
84-D-112 TRIDENT II WARHEAD PRODUCTION FACILITIES, VL	158.5	60.7	14.5	14.5
84-D-113 ANTISUBMARINE WARFARE/STANDOFF WEAPON WARHEAD PRODUCTION FACILITIES, VL	125.7	5.0	42.0	47.0
84-D-115 ELECTRICAL SYSTEM EXPANSION, PANTEX	14.5	5.9	0	0
84-D-117 INERT ASSEMBLY AND TEST FACILITY, PANTEX	13.3	5.1	0	0
84-D-118 HE SUBASSEMBLY FACILITY, PANTEX	40.0	31.0	0	0
84-D-120 EXPLOSIVE COMPONENT TEST FACILITY, MOUND	21.3	7.7	0	0
82-D-109 155 MM ARTILLERY FIRED ATOMIC PROJECTILE (AFAP) PRODUCTION FACILITIES, VL	40.0	15.0	0	10.0
82-D-111 INTERACTIVE GRAPHICS SYSTEM, VL	21.7	4.2	0	0
GENERAL REDUCTION		−9.7		
SUBTOTAL — PRODUCTION AND PRODUCTION SUPPORT PROJECTS		$180.5	$138.7	$165.7

P/RIM-8-028
3/6/86

DEFENSE PROGRAMS — WEAPONS ACTIVITIES CHART 9

FY 1987 CONGRESSIONAL BUDGET
WEAPONS PROGRAMMATIC PROJECTS (CONT'D)
($ IN MILLIONS)

PROJECT	TEC	FY 1986 APPRO-PRIATION	FY 1987 AUTHOR-IZATION	FY 1987 APPRO-PRIATION
RESEARCH, DEVELOPMENT AND TESTING				
86-D-104 STRATEGIC DEFENSES FACILITY, SNLA	$70.0	$ 2.0	$ 13.0	$ 15.0
86-D-105 INSTRUMENTATION SYSTEMS LABORATORY, SNLA	20.0	3.1	5.8	8.9
86-D-106 LABORATORY DATA COMMUNICATIONS CENTER, LANL	25.0	1.0	12.0	14.0
84-D-102 RADIATION-HARDENED INTEGRATED CIRCUIT LAB, SNLA	40.5	15.5	3.0	3.0
82-D-144 SIMULATION TECHNOLOGY LABORATORY, SNLA	40.0	10.3	6.0	6.0
GENERAL REDUCTION		−8.7		
SUBTOTAL RD&T		$ 21.2	$ 39.8	$ 46.9
TOTAL PROGRAMMATIC PROJECTS		$201.7	$178.5	$212.6

PARM:6:086
3/6/86

CHART 10

FY 1987 CONGRESSIONAL BUDGET
RESTORE AND MAINTAIN
(DOLLARS IN MILLIONS)

	TEC	FY 1986 APPRO-PRIATION	FY 1987 AUTHOR-IZATION	FY 1987 APPRO-PRIATION
GENERAL PLANT PROJECTS				
RESEARCH AND DEVELOPMENT				
87-D-101 GENERAL PLANT PROJECTS, VL	21.3	$ -	$ 21.3	$ 21.3
86-D-101 GENERAL PLANT PROJECTS, VL	19.8	19.8	-	-
TESTING				
87-D-101 GENERAL PLANT PROJECTS, VL	7.7	-	7.7	7.7
86-D-101 GENERAL PLANT PROJECTS, VL	7.7	7.7	-	-
PRODUCTION AND SURVEILLANCE				
87-D-121 GENERAL PLANT PROJECTS, VL	32.0	-	32.0	32.0
86-D-121 GENERAL PLANT PROJECTS, VL	28.7	28.7	-	-
SUBTOTAL – GENERAL PLANT PROJECTS		56.2	61.0	61.0
BASIC CAPITAL EQUIPMENT				
RESEARCH AND DEVELOPMENT	-	60.4	53.8	53.8
TESTING	-	43.0	50.5	50.5
PRODUCTION AND SURVEILLANCE	-	106.0	114.1	114.1
SUBTOTAL – BASIC CAPITAL EQUIPMENT		209.4	218.4	218.4
RESTORATION LINE ITEM				
82-D-107 UTILITIES AND EQUIPMENT RESTORATION, REPLACEMENT, AND UPGRADE, PHASE III, VARIOUS LOCATIONS	$1,042.0	152.2	97.9	116.9
TOTAL RESTORE AND MAINTAIN		417.8	$377.3	$396.3

PARM:8:082
3/6/86

CHART 11

FY 1987 CONGRESSIONAL BUDGET
REVITALIZATION
(DOLLARS IN MILLIONS)

PROJECT	TEC	FY 1986 APPRO-PRIATION	FY 1987 AUTHOR-IZATION	FY 1987 APPRO-PRIATION
REVITALIZATION				
85-D-102 NUCLEAR WEAPONS RD&T FACILITIES REVITALIZATION, PHASE I, VL	$152.3	$35.0	$30.0	$57.6
84-D-107 NUCLEAR TESTING FACILITIES REVITALIZATION, VL	79.2	12.9	13.3	15.3
TOTAL RD&T REVITALIZATION		$47.9	$43.3	$72.9

PARM:6:089
2/10/86

CHART 12

FY 1987 CONGRESSIONAL BUDGET ENVIRONMENTAL, SAFETY, AND HEALTH SUMMARY* (DOLLARS IN MILLIONS)

PROJECT	TEC	FY 1986 APPRO-PRIATION	FY 1987 AUTHOR-IZATION	FY 1987 APPRO-PRIATION
RESEARCH, DEVELOPMENT, AND TESTING				
87-D-102 ENVIRONMENTAL COMPLIANCE AND CLEANUP, LLNL	$134.0	$ 0	$ 7.0	$ 7.0
86-D-103 DECONTAMINATION AND WASTE TREATMENT FACILITY, LLNL	36.4	3.6	5.3	5.4
SUBTOTAL—RESEARCH, DEVELOPMENT, AND TESTING		$ 3.6	$12.3	$12.4
PRODUCTION AND SURVEILLANCE				
87-D-127 ENVIRONMENTAL, SAFETY, & HEALTH UPGRADE, MOUND	$ 4.3	$ 0	$ 2.4	$ 2.4
86-D-122 STRUCTURAL UPGRADE OF PU FAC., RF	5.6	2.8	2.4	2.6
86-D-123 ENVIRONMENTAL HAZARDS ELIM., VL	39.0	7.3	16.8	18.3
85-D-121 AIR & WATER POLLUTION CONT. FAC., Y-12	29.0	13.2	9.2	10.0
84-D-124 ENVIRONMENTAL IMPROVEMENTS, Y-12	45.4	11.3	9.3	10.0
SUBTOTAL—PRODUCTION AND SURVEILLANCE		$34.6	$40.1	$43.3
TOTAL—ENVIRONMENTAL, SAFETY, AND HEALTH		$38.2	$52.4	$55.7

*DOES NOT INCLUDE GPP FUNDS FOR ES&H PROJECTS

PARM:6:086
3/6/86

CHART 13

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

FY 1987 CONGRESSIONAL BUDGET
SAFEGUARDS AND SECURITY SUMMARY*
(DOLLARS IN MILLIONS)

PROJECT	TEC	FY 1986 APPROPRIATION	FY 1987 AUTHORIZATION	FY 1987 APPROPRIATION
RESEARCH, DEVELOPMENT, AND TESTING				
87-D-104 SAFEGUARDS AND SECURITY ENHANCEMENTS, PHASE II, LLNL	$67.4	$ 0	$ 4.3	$ 4.3
86-D-103 SAFEGUARDS AND SECURITY ENHANCEMENTS, LLNL AND SNLL	41.1	16.0	6.5	6.9
85-D-105 COMBINED DEVICE ASSEMBLY FACILITY, NTS	69.5	7.0	9.4	14.0
85-D-106 HARDENED ENGINEERING TEST BLDG., LLNL	3.1	1.8	0.3	0.4
84-D-104 NUCLEAR MATERIALS STORAGE FACILITY, LANL	18.6	11.4	0	0
84-D-105 SAFEGUARDS AND SECURITY UPGRADE, LANL	14.7	7.1	0	0
84-D-106 SECURITY SYSTEM UPGRADE, SNLA	3.8	1.9	0	0
83-D-199 BUFFER LAND ACQUISITION, LLNL AND SNLL	33.7	9.7	0	0
SUBTOTAL – RESEARCH, DEVELOPMENT, AND TESTING		$54.9	$20.5	$25.6
PRODUCTION AND SURVEILLANCE				
87-D-130 RECEIVING AND SHIPPING FACILITY, PINELLAS	$ 2.7	$ 0	$ 0.3	$ 0.3
86-D-124 SAFEGUARDS AND SECURITY, PHASE II, MOUND	5.0	1.9	1.9	3.0
86-D-125 SAFEGUARDS AND SECURITY, PHASE II, PANTEX	10.0	1.4	8.4	8.5
85-D-123 SAFEGUARDS AND SECURITY, PHASE I, PANTEX	5.0	2.8	0	1.0
85-D-124 SAFEGUARDS AND SECURITY, PHASE II, RF	3.3	2.2	0	0
84-D-211 SAFEGUARDS AND SECURITY, Y-12	68.0	12.2	27.2	30.0
84-D-212 SAFEGUARDS AND SECURITY, PINELLAS	7.5	4.4	0	1.0
SUBTOTAL – PRODUCTION AND SURVEILLANCE		$24.9	$37.8	$43.8
TOTAL – SAFEGUARDS AND SECURITY		$79.8	$58.3	$69.4

---

*DOES NOT INCLUDE GPP FUNDS SPENT ON SAFEGUARDS & SECURITY PROJECTS

PARM:6:084
2/10/86

CHART 14

DEFENSE PROGRAMS — WEAPONS ACTIVITIES

FY 1987 BUDGET REQUEST RECAP

- COMPLY WITH NWSM
- SUPPORT SDI MILESTONES
- INTEGRATE INERTIAL FUSION INTO TECHNOLOGY BASE
- ORDERLY CONTINUATION OF RESTORATION AND REVITALIZATION
- CONTINUE SAFEGUARDS & SECURITY UPGRADE
- MEET ES&H STATUTORY REQUIREMENTS

PARM:6:024
2/5/86

55(1)

STATEMENT OF

EDWARD V. BADOLATO

DEPUTY ASSISTANT SECRETARY FOR SECURITY AFFAIRS

ON

FISCAL YEAR 1987 APPROPRIATIONS HEARINGS

MARCH 17, 1986

STATEMENT OF EDWARD V. BADOLATO
DEPUTY ASSISTANT SECRETARY FOR SECURITY AFFAIRS
DEPARTMENT OF ENERGY

FISCAL YEAR 1987 APPROPRIATIONS HEARINGS

Mr. Chairman and members of the Committee, I am Edward V. Badolato, Deputy Assistant Secretary for Security Affairs. It is a pleasure to appear before you today to address the Department of Energy's Security Affairs' programs of Nuclear Safeguards and Security (including Classification), Security Investigations, and Verification and Control Technology and our Fiscal Year (FY) 1987 appropriation request required to carry out these important programs.

Since this is my first opportunity to testify before this Committee, I would like to take a minute to introduce myself before proceeding with the discussion of the appropriation request. Until my retirement on September 1, 1985, I had served 25 years as a career infantry officer with the U.S. Marine Corps. In March 1985 Secretary Herrington asked me to put together a team of professionals to conduct a study of the safeguards and security program at the Department's nuclear weapons and special nuclear materials facilities. This team conducted a five-month study project on safeguards and security and presented our recommendations to the Secretary on August 30, 1985. Subsequently the Secretary asked me to accept the challenging assignment of implementing the recommendations contained in our report. Accordingly, I retired from the Marine Corps and the Secretary appointed me Deputy Assistant Secretary for Security Affairs on December 4, 1985, with responsibility for not only implementing the findings of our report but also overseeing the extremely important Security Affairs functions of classification, arms control, and verification and control technology.

Mr. Chairman, I intend to keep you fully and currently informed on the activities of interest to your Committee in the Security Affairs area. Routinely, I will be communicating our program initiatives and areas of concern to you and the Committee staff. I will be pleased to meet with you, Committee members, or Committee staff at anytime to discuss matters of interest.

SECURITY AFFAIRS

The Security Affairs programs that I will discuss with you today play an extremely critical role in fulfilling the Department's national security mission. We are keenly aware of the importance of our responsibilities in carrying out these programs. They are the Department's cornerstone in: preventing the theft or sabotage of nuclear weapons, materials, facilities, and classified information; developing and implementing policy for managing the classification and declassification of information; providing nuclear weapons systems expertise to the Intelligence Community; controlling proposed exports of nuclear materials and equipment; providing technology and equipment necessary to monitor treaty compliance of foreign nuclear weapons programs; and providing technical and analytical support for DOE's role in arms control negotiations, policy formulation, and implementation.

Here with me today are Mr. Michael B. Seaton, Acting Director, Office of Safeguards and Security; Mr. A. Bryan Siebert, Acting Director, Office of International Security Affairs; and Dr. F. Charles Gilbert, Acting Director, Office of Classification. All three individuals would be pleased to answer any questions you or the members of the Committee might have. Also here with us today is Mr. Charles Boykin, the Deputy Assistant Secretary for Intelligence. Funding for the intelligence activities, which are organizationally assigned to Mr. Boykin, is included within the Verification and Control Technology request. I will cover that program today, and Mr. Boykin will be happy to answer any questions you may have regarding DOE intelligence activities.

With the Chairman's permission, I will submit my formal statement for the record. It covers the details of our appropriation request. I would then like to make a presentation which covers the highlights of the Security Affairs' program. You each have copies of my formal statement and the viewgraphs which I will use today.

FY 1987 BUDGET

We are requesting an appropriation of $201.9 million for Security Affairs' programs for FY 1987. This consists of $66.9 million for Nuclear Safeguards and Security (including $4.3 million for Classification), $33.3 million for Security Investigations, and $101.7 million for Verification and Control Technology.

NUCLEAR SAFEGUARDS AND SECURITY

The Nuclear Safeguards and Security program has three major program goals:

- Prevent the theft, sabotage, or loss of nuclear weapons and their components, special nuclear materials, and facilities and the unauthorized disclosure of classified information.
- Provide a base of safeguards and security technology for the protection of Department of Energy facilities, nuclear weapons, materials, and classified information.
- Strengthen international protection to deter the diversion of nuclear materials and to support nonproliferation and national security objectives.

As I stated earlier, my first association with the Department of Energy (DOE) was as the director of a Special Project Team, entrusted by the Secretary of Energy to conduct a study that would review the adequacy, effectiveness, and management of DOE's safeguards and security program, and to recommend those actions needed to ensure that the appropriate level of protection is maintained throughout the Department's nuclear weapons complex.

In conducting this study, I and the members of my team held extensive onsite reviews at all of DOE's major facilities, conducted hundreds of interviews with senior management, staff, and security force personnel throughout the complex, and reviewed the management and program actions that have been taken, were underway, or proposed.

In the final report to the Secretary, we concluded that, overall, the physical safeguards and security systems at DOE's nuclear weapons facilities were satisfactory, and improvements were continuing to be made. We also found that recent security enhancements throughout the complex had significantly reduced or eliminated many protection vulnerabilities previously identified. More importantly, our study concluded that, while every facility had not completed its physical security system improvements, any adversary who attempts to gain control over or steal a nuclear weapon, a critical weapon component, or special nuclear material would face a high probability of failure.

Additionally, the Special Project Team found that strong management action was needed in numerous areas, presented a number of specific findings and made recommendations directed at improving the effectiveness and efficiency of nuclear safeguards and security. We are now in the process of developing the programs necessary to implement these recommendations, and I would like to briefly discuss our innovative implementation plan called "Operation Cerberus". Cerberus is a major Department-wide initiative to implement the nearly 100 recommendations of the Special Project Team's report. Task force committees have been organized to work on each safeguards and security functional area, such as physical security, material control and accountability, personnel, threat information, research and development, etc. Nearly 200 of our "best and brightest" scientists, security experts, and managers have been enlisted into these teams from both Headquarters and the field. The completion date for this important project is November 1, 1986.

INITIATIVES

Before discussing, in detail, the specific program areas for which funding is requested, I would like to briefly discuss the status of several other initiatives the Department has undertaken to enhance our overall security operations.

In the area of upgrading and standardizing our security training, the DOE Central Training Academy (CTA) located at Kirtland Air Force Base, Albuquerque, New Mexico, completed its first full year of operation. CTA training programs include general protective force training, legal authority training as it relates to arrest authority and use of force, crisis management, weapons safety training, and specialized training for members of special response teams at individual facilities. We believe that a Central Training Academy is an excellent concept for assuring that standardized training on policy and protective force procedures is provided to all protective force personnel. The program, now well established, will continue to require concentrated management attention in FY 1987 in order to achieve its full potential.

The Department issued a Final Rule on "Arrest Authority and Use of Force by Protective Force Officers" which was effective on August 30, 1985. This Rule sets forth DOE's policy concerning arrests and associated use of force by all DOE and DOE-contractor employees engaged in nuclear security duties. The purpose of this Rule is to ensure that all protective force personnel at DOE facilities exercise the arrest authority provided them under section 161k of the Atomic Energy Act (42 U.S.C. 2201k), including the use of force to effect an arrest or apprehend a suspect in a manner consistent with both DOE's security objectives and recognized legal standards.

The Department's initiatives and programs over the past few years to support site-specific safeguards and security improvements have emphasized large-scale, state-of-the-art perimeter intrusion detection and assessment systems, surveillance equipment, and guard force response capabilities.

Aided by improvements in measurement technology and data analysis techniques, nuclear material control and accounting practices are now being increasingly emphasized at key DOE sites to identify improvements that will help address DELETED concerns such as DELETED

Nuclear materials measurements and related control programs are vital to effective safeguards in meeting the needs of detection and localization of losses and providing confirmation that no diversion has occurred. Efforts are being conducted by Brookhaven National Laboratory, Los Alamos National Laboratory, and the DOE New Brunswick Laboratory to assure: (1) DELETED

The rapid proliferation of computers throughout the nuclear weapons program and our dependence upon those computers to accomplish our mission presents threats not only from the insider and from hostile intelligence activity, but from the "hacker" as well. DELETED

Therefore, significant expansion of the computer security effort has been undertaken to address these threats by limiting access, authenticating users, and providing mandatory controls over the sharing of information within computers.

We are in the process of revising Department of Energy policy for the classified computer security program in order to provide better direction and oversight of computer security efforts throughout DOE. The Wide Band Communications Network has been extensively reviewed and its implementation upgraded to include improved computer security mechanisms. Also, we have initiated a significant effort to develop new, comprehensive standards and criteria for evaluation of computer security programs at DOE facilities. This effort is rapidly approaching completion and is expected to provide overall guidance for the inspection of major computer security facilities.

In addition, the Department has joined forces with the Department of Defense's National Computer Security Center (NCSC) by establishing a joint council to coordinate and eliminate duplication in this complex and rapidly evolving field. Six working groups addressing policy, networks, supercomputer security, operational security, training, and research and development have been formed. Effective coordination within the groups has enabled DOE to take advantage of NCSC's developments and has helped assure effective utilization of available funds.

The Federal Aviation Administration (FAA) has completed a series of public hearings on the DOE request for airspace restrictions over nine critical DOE facilities. Following the hearings, the Department received a large number of concerns and questions from the FAA which were reviewed by DOE and resulted in simplified proposed airspace boundaries and ceilings, as well as an established communication criteria for emergency purposes. This is a priority initiative and we anticipate the publishing of a Notice of Proposed

Rulemaking on individual site restrictions as site concerns and questions are resolved.

To establish a clear and concise understanding between field elements and the Office of Safeguards and Security on the comprehensive safeguards and security program for each facility, our planning process was significantly expanded and formalized. A Master Safeguards and Security Agreement (MSSA) program was initiated requiring the documented commitment of both the field and Headquarters on a long-range safeguards and security plan for each individual facility. Two prototype MSSA's have been completed and a third is near completion. This program will assure that all facets of the DOE safeguards and security program have been thoroughly reviewed and coordinated, and that realistic implementation plans have been concurred in by both Headquarters and the responsible field organization.

The Department has initiated study efforts to develop a DOE-wide Human Reliability Program (HRP) to provide a mechanism for both addressing the potential "insider" threat and assuring that employees are capable of displaying sound judgment under normal, adverse, and threatening conditions. This program centers on potential DELETED of DOE and contractor employees. A Human Reliability Program task force was created to develop agency regulations and directives, and implementation guidelines. This task force consists of Headquarters; field office; laboratory; and Government-owned-contractor-operated facility personnel, with expertise in a variety of disciplines including security, medical, program management, psychology, law, education/training, substance abuse, and industrial relations.

A Final Rule was published on "Physical Fitness and Medical Standards for DOE Protective Force Personnel" which became effective in December 1984 and was scheduled for full implementation in December 1985. Ninety-two percent of the approximately 4,700 protective force personnel have now met the standards and it is anticipated that 95 percent will meet the standards by April 1986. Those protective force personnel who, because of a temporary medical or physical condition, were unable to qualify by December 23, 1985, may be granted an additional 180 days to qualify. The Department has recommended that the protective force personnel who cannot meet the standards be reassigned to positions for which the standards are not applicable.

In support of the goal to maintain credible, up-to-date, and operationally practical classification policies and guidance, the Office of Classification's FY 1986 support activities focused on technical studies and analyses in such areas as inertial confinement fusion, radioactive material dispersal, advanced isotope separation, corrtex diagnostics, material interface instability and mix, and astrophysics. In addition, a major program for the review of sensitive nonnuclear technology was initiated and substantial progress was made in the development of educational materials, appraisal training, and quality assurance procedures.

THE BUDGET

The Nuclear Safeguards and Security appropriation request for FY 1987 is $66.9 million. Operating expenses require $61.1 million, capital equipment $4.8 million, and construction $1.0 million.

The safeguards and security program strategy requires that our FY 1987 request directly supports operational, developmental, and construction activities. Operational activities include: technical assistance in terms of system interface, upgrades, and improvements required to address vulnerabilities identified by onsite evaluations; protective force training; nuclear materials management, control, and accounting; and the management oversight of the DOE-operated New Brunswick Laboratory. Developmental activities which include research and development of physical protection, materials control and accounting systems, hardware, and technology to strengthen the overall safeguards and security program, are conducted by the national laboratories for application by the Department's field operations. Construction activities include the construction of a Nuclear Safeguards Technology Laboratory at Los Alamos, New Mexico, which is essential to support development of improved nuclear materials control and accountability.

The safeguards and security request does not provide funding for the construction, capital equipment, and operating expenses of safeguards and security systems at our field facilities. These costs are budgeted for and expended by the Department's outlay programs, which include the nuclear weapons, nuclear materials production, and the civilian nuclear energy and energy research programs.

Mr. Chairman, the FY 1987 request of $66.9 million consists of the following six basic elements which I will address in greater detail. These include: safeguards and security operations, technology development, international safeguards, classification, construction, and program direction.

SAFEGUARDS AND SECURITY OPERATIONS

Activities included under the safeguards and security operations category provide direct support to the overall mission of protecting all sensitive Departmental resources, which range from completed nuclear weapons to classified documents. At the heart of this program is the continued requirement to establish a systems-wide approach to safeguards and security problems which can assure that proposed solutions are fully integrated and compatible throughout safeguards and security operations.

Elements in this category involve three major functions: guidance and assistance to DOE field operations for safeguards and security system improvements; oversight of the nuclear materials management and safeguards system, which provides timely data on nuclear materials production, utilization, transfer, tracking, and storage; and the operation of the Ne Brunswick Laboratory, the safeguards analytical laboratory at Argonne, Illinois.

Over the past 3 years, our major efforts have been to assist in the identification of deficiencies at DOE facilities and to assist field managers in applying state-of-the-art, large-scale facilities' hardening features; surveillance equipment; and effective guard force response capabilities. Our intent was to make our sites unattractive targets to outsider adversarial forces. As many of these facilities' programs are now regarded as highly effective, our focus and priorities are now shifting to protection against potential "insider" threats. Recognizing the potential for an *DELETED*

the Department is aggressively pursuing this problem through the development and implementation of a DOE-wide insider protection program. Key elements of this program are as follows: personnel clearance; human reliability; physical protection; information control; operations security; security awareness and education; intelligence community liaison; foreign travel/visists and assignments; and nuclear material control. DELETED

into our overall physical protection program, we will be in DELETED

The Office of Safeguards and Security has formalized and emphasized computer security activity through the establishment of a new branch which will address this critical area and the publication and implementation of updated computer security policy. We will continue the initial development of an automated means to help identify computer system vulnerabilities. This automated computer security system is being developed by Los Alamos National Laboratory and will provide more comprehensive and effective assessments of system vulnerabilities.

We will continue the DELETED

We will also continue the development of advanced DELETED and DELETED in support of the Intelligence Community technical security operations, DELETED

Advanced special weapons and tactics training, with a particular focus on realistic tactical situations, continues to be a critical ingredient in improving the capabilities of our protective forces. We will utilize our Central Training Academy (CTA) to provide a high level of standardized training, and to ensure a high standard of readiness throughout DOE. The CTA instills a uniform and professional approach to protective force training in the tactical, operational, and technical aspects of physical security. The CTA will continue to be expanded in depth and scope to certify instructors and training officers and to provide executive protection training as it relates to DOE and DOE contractor executive personnel. In FY 1985 the CTA provided training to about 1,300 DOE and DOE contractor personnel. In FY 1986 training will be provided to approximately 2,800 individuals while in FY 1987 we project training for 1,800 personnel. The reduction in FY 1987 reflects completion of the initial round of training to implement DOE policy on arrest authority and use of force.

We will continue to operate the DOE's Nuclear Materials Management and Safeguards System, supported jointly with the Nuclear Regulatory Commission. This system, the Nation's single nuclear materials computerized data base, is used to track nuclear materials in the United States and to record the shipment of nuclear materials to and from foreign countries. Each year, approximately 78,000 nuclear material transactions (e.g., approximately $10 billion in nuclear shipments, receipts, and inventory changes) from 93 contractors and 1,400 licensees are entered into this system and tracked.

We will continue to operate the New Brunswick Laboratory (NBL) which serves as the U.S. Government safeguards analytical laboratory and provides materials and services to DOE field offices and contractors in order to fulfill safeguards requirements essential for the control and accounting of nuclear materials and related materials. Its functions include: providing measurement services in support of Government audit and inspection requirements; assessing and evaluating measurement technology in support of DOE fuel cycle and weapons production activities; developing, certifying, and distributing reference materials for calibration and standardization of materials measurements; and assisting in technology exchange and training in measurement technology.

TECHNOLOGY DEVELOPMENT

Technological development continues to be an integral part of our safeguards and security program since advanced technology is necessary for improved protection systems for DOE nuclear facilities. Research and development conducted by the national laboratories provides DOE with a technological base for developing new systems for safeguarding the Department's nuclear facilities and materials. Results of these efforts are also made available to the Nuclear Regulatory Commission and its licensees, as well as other Federal agencies.

Technology development reflects an increased emphasis on addressing potential DELETED The DELETED emphasis in FY 1987 features three development areas that will contribute to providing protection consistent with DOE threat guidance as well as specific requirements at DOE production and processing operations. These development areas are: integrated material control systems, supporting physical protection technologies, and improvements in the quality of confirmatory nuclear material accounting. For example, integrated nuclear material control systems and concepts will be applied within the DELETED

Systems concepts and technologies will be developed to establish detection networks from existing information systems, such as processing operations, health and safety, and production quality control, and integrating this relevant safeguards information into a timely system of internal controls sensitive to insider attempts of malevolent action.

Potential consequences of DELETED

Physical protection developments in FY 1987 will emphasize technology and systems development for monitoring and control of nuclear material and personnel movements inside DOE nuclear facilities. In addition, technological developments DELETED

The Department is committed to improvements in the quality of nuclear material accounting at the DOE nuclear processing facilities. In light of potential DELETED such improvements are needed to confirm the effectiveness of DELETED

In FY 1987, improvements will be sought in measurement technology and in "secure" data base management and analysis methods. The results of these developmental efforts are expected to have a significant impact on future upgrading and improvement programs sponsored by DOE outlay programs.

Our present research and development activities continue to be closely coordinated with related efforts of the Nuclear Regulatory Commission and the Department of Defense to avoid duplication and to ensure exchange of information and technology. Joint research efforts of mutual benefit are identified in order to reduce the cost of such activities to each agency, and we will continue to emphasize this coordination of research and development to further minimize costs.

INTERNATIONAL SAFEGUARDS

Our International Safeguards program supports U.S. nonproliferation and national security objectives to minimize the proliferation of nuclear weapons. The primary objective is to strengthen international safeguards and physical protection through technical support to the International Atomic Energy Agency (IAEA) and cooperative efforts with other nations. Research and development will continue on new and improved technologies and systems for IAEA safeguards, including efforts on safeguards for reprocessing plants and for mixed-oxide (plutonium and uranium) fuel fabrication plants. These efforts reflect the increasing use of plutonium as fuel in civil nuclear fuel cycles. An important aspect of our research and development is increased bilateral cooperation, including technical exchanges with the Federal Republic of Germany, France, and the United Kingdom, as well as the inspectorate of the European community. These bilateral efforts optimize the research and development efforts of the U.S. and other nations through exchanges of information, staff, and equipment on international safeguards and physical protection of nuclear materials.

The DOE decision to develop and demonstrate the atomic vapor laser isotope separation (AVLIS) process introduced a new requirement for research and development of international safeguards methods and equipment for use with AVLIS under the U.S./IAEA agreement for the application of international safeguards in the U.S. Adding to the importance of this effort is the anticipated decision by other nations, including nonnuclear weapons states, to implement the AVLIS process by the 1990's. The resource impact of the new AVLIS-based work is offset by termination of the corresponding development of international safeguards for the Portsmouth Gas Centrifuge Enrichment Plant.

Increased funding will be required in FY 1987 to permit the establishment of safeguards cooperation with Argentina, Brazil, and Japan. This increase in funding will also permit the Department to continue its responsibility to train foreign personnel in the most advanced safeguards and physical protection techniques in accordance with Section 202 of the Nuclear Non-Proliferation Act of 1978.

Compliance with international agreements and nonproliferation objectives requires that we continue tracking international shipments of U.S.-origin materials and tracking of foreign origin materials in the U.S. Other continuing activities include recording exports, imports, and transfers of materials of foreign origin in the U.S.; reporting to the IAEA under the U.S./IAEA Safeguards Agreement and other agreements; and determining inventories of nuclear materials for bilateral agreements for cooperation.

CONSTRUCTION

The Nuclear Safeguards Technology Laboratory (NSTL) to be located at Los Alamos will improve our research and development effort in the safeguards and security technology area. Specifically, this project is to provide for centralized instrumentation development laboratories designed for safeguards requirements; for the development, testing, and evaluation of measurement and accountability systems; and for facilities to support rapid transfer of advanced safeguards technology to the nuclear community.

An additional benefit of the NSTL will be improved security of special nuclear materials (SNM). At present, the DELETED

The total estimated cost of this facility is $10.6 million, with $1.0 million requested in FY 1987 for building design and construction of an access road.

PROGRAM DIRECTION

Our program direction supports a total of 133 Headquarters full-time equivalent positions, which includes the staff for the classification program.

CLASSIFICATION

The FY 1987 request for the Classification program, which is incorporated in the Nuclear Safeguards and Security program budget, is $4.3 million. The Office of Classification is responsible for managing and implementing the Department's program for the classification and declassification of information in the interest of the national security.

The FY 1987 request will provide continued support for the sensitive technology review program and will continue the development of an automated system for tracking open literature references to classified subject areas (initiated in FY 1986). Classification policy studies will concentrate on such areas as computer codes, opacity, nonnuclear Strategic Defense Initiative (SDI), intelligence, and safeguards and security. Educational improvements will focus on initiating a centralized training program for classification officers. In addition, data conversion and entry will continue on the automated information retrieval system for all classification guides and precedent-setting documents and continuing support will be provided for Classification's appraisal, quality assurance, and document review programs.

SECURITY INVESTIGATIONS

The FY 1987 request for personnel security investigations is $33.3 million. Background investigations are required by the Atomic Energy Act of 1954, as amended, and by Executive Orders 10450 and 10865. The Department is not permitted to conduct its own investigations; hence, we rely on and reimburse the Federal Bureau of Investigation (FBI) and the Office of Personnel Management (OPM) for conducting investigations of DOE employees, contractor employees, and consultants assigned to critical sensitive positions prior to their being granted access to classified information, classified materials, or special nuclear materials.

In order to have efficient program management and be consistent in meeting security requirements, we use this single program to meet the strict requirements of the Atomic Energy Act of 1954 to ensure that granting access to classified information, classified material, or special nuclear material will not endanger the common defense and security. Most background investigations directly support Defense Programs activities; however, all security investigations are funded under Defense Programs since the Department believes any clearance or access determination is directly related to protecting the common defense and security.

Background investigations conducted for the DOE by OPM continue to be lengthy in time. The OPM has, however, initiated a number of actions intended to reduce their investigative time to about 90 calendar days by March or April 1986. These actions include the hiring of additional Federal investigators, the hiring of contractor investigators, and the lending of a "priority" status to DOE clearance requests that have been pending completion by OPM for more than 90 days. Even though the average OPM investigative time for DOE clearance cases remains high, new cases submitted to the OPM from October through December 1985 are now being completed and returned to the DOE within an acceptable interval. Backlogged DOE cases at the OPM are being completed as quickly as possible and forwarded to the appropriate DOE office for adjudication. DOE backlogged cases at the OPM are expected to be entirely completed by April 1986.

The DOE has also established a task force to review and determine if the numbers and levels of clearances being processed for DOE and DOE contractor employees are appropriate. This group is also tasked to identify what steps can be taken to lower the total number of clearance requests while continuing to maintain adequate security at sensitive DOE facilities. The initial task force recommendations will be reviewed and evaluated in late February and early March 1986.

The projected cost for a single FBI background investigation is $1,850 and the projected cost for an OPM background investigation is $1,625 - no change from FY 1986 costs. National Agency Checks are expected to continue to cost approximately $10 each. Our budget request provides for approximately 30,764 full-field investigations and National Agency Checks, which is an increase of approximately 1,542 investigations.

SAFEGUARDS AND SECURITY CROSSCUT

As I mentioned earlier, the DOE outlay programs provide the funding for construction, capital equipment, and operating expenses for safeguards and security activities relating to their programs at the Department's field facilities. Total safeguards and security funding is reflected in the Department's crosscut estimate, which is an administrative summation of all safeguards and security items in the Department's program requests, including the request for the Office of Safeguards and Security (OSS), with the exception of the Office of Classification component. The crosscut appropriation estimate for FY 1987 totals $789 million with $691 million for defense activities.

As the Departmental coordinator for all DOE safeguards and security activities, Security Affairs has a range of responsibilities for safeguards and security crosscutting activities which include ensuring that program budget submissions properly reflect judgments that have been made with respect to security considerations. For example, the major construction upgrades at DELETED

which provide enhanced integrated protection programs against the Department's defined threats were fully coordinated with and recommended for approval by Security Affairs. Two additional safeguards and security line item projects have been proposed for the FY 1987 budget. One will provide needed DELETED

with the other providing DELETED

VERIFICATION AND CONTROL TECHNOLOGY

I would now like to discuss the FY 1987 budget request for the Verification and Control Technology program.

This budget comprises the functions of the Deputy Assistant Secretary for Intelligence and the Office of International Security Affairs (OISA). OISA was formed some years ago to bring together under a single management the functions which define and carry out the Department's verification and control activities to meet national security objectives. The key components of the OISA program supporting this undertaking are:

- Develop and produce the technology to monitor foreign nuclear explosives.
- Control exports of nuclear related materials, equipment, and

technology.

- Provide technical and analytical support to DOE arms control activities.

The Deputy Assistant Secretary for Intelligence is responsible for meeting all intelligence requirements for DOE, both internal and external to the Department. While I will cover intelligence activities, Deputy Assistant Secretary Boykin is available to respond to your specific questions.

INITIATIVES

Before discussing in detail the specific program areas for which funding is requested, I would like to call your attention to a number of initiatives that the Verification and Control Technology program has carried out recently.

DELETED satellite payload systems for detecting, locating, and determining yield of nuclear detonations in the atmosphere and in space were completed and delivered on time and within budget in Fiscal Year 1986.

DELETED

DELETED

Technical results to date have exceeded expectations and will enhance U.S. confidence in verifying the yields of Soviet underground nuclear tests.

The DOE developed Norwegian Regional Seismic Array (NRSA), in its second year of operational evaluation, continues to provide high quality, near real-time, digital seismic data to U.S. analysis centers for improving the detection and identification of underground explosions.

The Regional Seismic Test Network (RSTN), a five-station network located in the United States and Canada, has completed 4 years of highly successful research, development, testing, and evaluation. This network serves as the prototype for a regional monitoring network to be deployed to the Soviet Union in the event of a comprehensive test ban treaty.

DELETED

In 1985, OISA provided evaluations and recommendations for more than 10,000 export transactions. This represents a doubling of the workload of 1983 and a 3,000 case increase over 1984. The improved management procedures implemented in 1984 and further refined in 1985 enable Defense Programs to meet the increased workload.

BUDGET

Turning now specifically to the Verification and Control Technology budget, our request for FY 1987 is $101.7 million which includes $95.5 million for operating expenses, $4.2 million for capital equipment, and $2.0 million for construction. The operating expense figure includes $4.4 million for program direction. Activities supported by operating expenses fall into two functional categories: detection technology and analytical support, both of which draw upon the unique expertise, skills, and resources of the national laboratories of the nuclear weapons complex.

The FY 1987 increase of $10.7 million in operating expenses (exclusive of program direction) over FY 1986 is attributable mainly to increased costs of sensor deliveries which DOE must make for various satellite systems, for our base technology program, preparations for onsite and regional verification, increased requirements for technical analysis of national security and foreign policy issues related to nuclear weapon systems, and DOE intelligence responsibilities. DELETED

The DOE resources DELETED in part or in whole, spaceborne sensors for treaty verification and DELETED environmental sample analysis, weapons intelligence, and proliferation intelligence activities.

Beyond the increase in operating expenses, the FY 1987 request also includes $2.0 million to complete construction of a Space Science Laboratory supporting satellite fabrication and technology development efforts at Los Alamos National Laboratory. Total estimated cost is $7.5 million, with completion in early 1988.

DETECTION TECHNOLOGY

Detection technology encompasses technologies related to the detection of nuclear weapons activities--spaceborne sensors, seismic and nonseismic techniques, debris detection, sample analysis, and directed energy efforts. Our activities are designed to respond to treaty verification responsibilities DELETED for detecting, locating, and characterizing nuclear explosions conducted underground, in the atmosphere, or in space. DELETED

The FY 1987 request for detection technology activities is $67.8 million, a $7.6 million increase over the FY 1986 amount of $60.2 million. The increase is to meet delivery commitments for the spaceborne sensor launch schedule, to increase the current level of effort in Directed Energy Verification, provide protective measures to DOE satellite systems, and to develop advanced sensor concepts.

SPACEBORNE SENSORS

The overall purpose of our space effort is to develop and maintain U.S. capability to detect, locate, and characterize nuclear explosions and, in time of war, DELETED to assist the National Command Authority in attack warning and damage assessment DELETED The effort includes research, development, and fabrication of sensor packages and operational support, which provides for calibration and testing of subsystems and the evaluation of data collection, processing and exploitation. In FY 1987, DOE will be required to deliver DELETED three less DELETED required in FY 1986.

DELETED

DELETED

In conjunction with the Air Force, we maintain the readiness of sensors delivered to the spacecraft manufacturers, assist in analyzing data received,

DELETED

Underpinning the production and operational support elements of the detection technology effort is a baseline technology program to conduct research that defines future instrument needs, advances the underlying science and technology, monitors the satellite operational environment, and develops new instrument concepts and configurations.

DELETED MULTIYEAR PROCUREMENT

DOD and the Air Force are requesting, in their FY 1987 submission, funds for multiyear procurement of DELETED systems on an accelerated delivery schedule. Should this be approved by Congress, reprogramming may be required in FY 1987 to provide additional funds to procure long leadtime items to meet the accelerated DELETED schedule.

DELETED

DIRECTED ENERGY VERIFICATION

Due to the increased U.S. and Soviet activity in directed energy DELETED we have begun the development of technology for near-term

DELETED

TECHNOLOGY DEVELOPMENT

Technology programs for FY 1987 and beyond will focus on precluding technological surprise and emphasize technology development that can provide quick reaction responses in support of changing verification issues and intelligence needs. Efforts will continue toward research and development of new technologies to enhance current measurement capabilities or to provide entirely new techniques of measurement to support our verification mission. Such efforts require highly specialized research, capitalizing on unique DOE laboratory expertise and capability. A highly successful example is the DELETED development in FY 1985 which has matured from the advanced concepts stage to technology application. Advanced concepts currently include the development of new

DELETED

DELETED

SEISMIC VERIFICATION

DOE's in-country seismic research and development program was established to support an enhanced seismic verification capability at regional and local distances and to ensure that DOE can provide in-country seismic equipment/systems to support United States verification of future nuclear test ban treaties. The systems and technology developed and tested to date have become the U.S. Government standard for seismic stations in terms of treaty verification. Seismic data from these same stations, to a large measure, contribute significantly to non-treaty users of seismology both nationally and internationally.

The operation and maintenance costs of DOE's Regional Seismic Test Network (RSTN) will be phased out during FY 1987. Because of its proven value for both treaty verification and nontreaty purposes DOE will retain system control of the RSTN and provide for any necessary upgrades consistent with our treaty obligations. In FY 1986 DOE will either transfer the operation and maintenance costs to another user in order to continue operations or warehouse the system in preparation for field deployment to the Soviet Union. This five-station network, located in the United States and Canada, has been operated over the past 4 years to gain experience in how an in-country seismic system would be used to monitor compliance with nuclear test bans. As an adjunct to the primary development, the RSTN has been invaluable in providing data for input to the regional seismic DELETED studies being conducted at Lawrence Livermore National Laboratory.

An advanced element of DOE's in-country seismic research program is the design, development, deployment, and operation of a regional seismic array system in Norway. This is a cooperative effort among DOE, the Defense Advanced Research Projects Agency (DARPA), and the Norwegian government. The DOE and DARPA deployed and began operating an array system in 1984 under existing government-to-government agreements. In Fiscal Year 1985, the array achieved operational status and will undergo 2 to 3 years of system evaluation. The data collected will provide an additional basis for evaluating the utility of an array system for verifying compliance with treaties limiting or banning underground nuclear tests. In Fiscal Year 1986, DOE initiated plans for development and installation of a second advanced seismic array in cooperation with other United States agencies.

As a necessary step to understanding regional seismic signal propagation from nuclear test sites, planning toward a cooperative seismology program with the PRC was started by DOE in FY 1984 and continued in FY 1985. This program initiative, currently involving limited FY 1986 funding for conceptual design, will lead to a joint U.S./PRC program in seismic array

DELETED

FY 1987 funding will provide for fabrication of sensors after the U.S. and the PRC have reached agreement on the array installation.

DELETED

35

DELETED

ONSITE MONITORING

The Peaceful Nuclear Explosions Treaty (PNET) and the Threshold Test Ban Treaty (TTBT), although not ratified, provide for the United States and the Soviet Union to make direct onsite observations, exchange technical data, and conduct measurements on each other's territory under the terms of the agreements and protocols. DOE has the U.S. Government responsibility for implementing the field verification measurements program should the treaties be ratified. To meet this commitment, DOE maintains an equipment suite and has a technical cadre of personnel with the skills needed to implement onsite monitoring.

The FY 1987 request will enable DOE to upgrade 10-year-old equipment to a current state of readiness and reliability. However, should one or both of the treaties be ratified, additional resources will be needed to assemble the field operational team and to deploy to the Soviet Union.

DELETED

DELETED

ANALYTICAL SUPPORT

Our work in analytical support provides valuable assistance to the Departments of State, Defense, and Commerce; the Arms Control and Disarmament Agency; the Intelligence Community; and the Nuclear Regulatory Commission, as well as DOE.

The FY 1987 request for analytical support activities is $23.3 million, a $3.1 million increase over the FY 1986 amount of $20.2 million. The work in analytical support is carried out in five topical areas: arms control; export control, technology transfer, and international exchange; weapons intelligence; proliferation intelligence; and energy assessments.

DELETED

ARMS CONTROL

DOE is responsible for providing technical expertise in verification matters as a part of the U.S. arms control process. In addition, our capability to meet national security requirements demands continuing assessment of the impact of arms control policy on the nuclear weapons complex. United States arms control policy must take account of the Nation's nuclear weapons requirements, production, and stockpile maintenance capabilities. The relationship between the nuclear weapons program and arms control activities utilizes DOE technical expertise in support of interagency and international arms control policymaking, negotiation, and implementation, as well as in deliberations on treaty verification and compliance. ISA has primary responsibility for representing DOE Defense Programs activities in the interagency and international arms control arenas.

EXPORT CONTROL, TECHNOLOGY TRANSFER, AND INTERNATIONAL EXCHANGE

OISA also has responsibility for reviewing proposed nuclear and energy-related exports, technology transfer, and international cooperation and exchange agreements to ensure their consistency with United States national security and nonproliferation objectives.

During FY 1987, we will continue development and implementation of an improved data base and processing techniques for tracking U.S.-origin special nuclear material that is reprocessed, transformed, transferred, and recycled abroad. We also will continue improving systems for monitoring and evaluating nuclear technology transfer activities, including visits of foreigners to sensitive DOE facilities and certain travel by DOE scientists and technicians abroad.

The unique experience and resources of the DOE nuclear weapons complex are engaged on a continuing basis to identify emerging and militarily critical technologies for the DOD-compiled listings and to support the Departments of

State and Commerce in carrying out their responsibilities for controlling United States exports and international cooperation and exchanges. We also have the lead responsibility within DOE to determine for the Executive Branch whether a request for a Nuclear Regulatory Commission license to export nuclear materials, reactors, and equipment specially designed for nuclear purposes would be inimical to United States national security interests. Similarly, our expertise provides the basis for control of naval and maritime nuclear propulsion technology in coordination with DOE's Office of Naval Reactors.

WEAPONS INTELLIGENCE

Nuclear weapons intelligence is responsible for: supporting the DOE and the Intelligence Community; identifying and analyzing data on foreign nuclear weapons, nuclear weapons programs, nuclear weapons support programs, and the threat to the U.S. weapons. We compare foreign and U.S. programs and assess the impact of treaty negotiations, monitoring and verification on these programs.

The weapons intelligence program is determining the design philosophy, special nuclear materials requirements, characteristics, maintenance, and logistic practices of the Soviet nuclear weapons program. DELETED

.different DELETED approaches to design, testing, and production of weapons, if validated by subsequent intelligence efforts, could cause an unequal impact under a treaty of equal constraint.

DELETED

efforts will continue to identify indicators of Soviet progress and keep abreast of Soviet developments in these areas.

DELETED

PROLIFERATION INTELLIGENCE

The DOE proliferation intelligence program supports U.S. nonproliferation goals with a program to assess the nuclear capabilities of foreign countries of concern. Additional studies follow technology transfer issues and concentrate on the incentives and activities of possible nuclear supplier nations. The worldwide movement, production, and utilization of special nuclear material (SNM) is tracked and reported to appropriate agencies throughout the U.S. Government. An outgrowth of the nuclear proliferation DELETED program DELETED providing basic intelligence support for appropriate U.S. Government response to a nuclear terrorist threat or emergency. These analyses support both policymakers DELETED in support of such activities as export licensing decisions, foreign policy initiatives, and the overall assessment of worldwide nuclear capabilities.

FY 1987 resources will provide for continuation of DELETED assessments for all currently identified countries of proliferation concern, assessing the implications of new developments in the nuclear fuel cycle and weapons technology activities of these countries. We will support and strengthen the continuing analysis and assessment of the proliferation impact of actions by nations supplying nuclear and other technology, maintenance of the SNM Tracking and Management Analysis System (STAMAS), and the nuclear terrorism project.

TECHNOLOGY INTELLIGENCE

Under the rubric of technology intelligence, DOE intelligence focuses on foreign technologies critical to DOE and other agencies from the aspect of their application to strategic capabilities, undesirable technology transfer, and the technological threat posed by an adversary nation. This activity examines directed energy

DELETED

It supports decisionmaking within DOE and other U.S. Government agencies on export case review and bilateral scientific exchanges and contributes to various strategic technology assessments DELETED In this manner DOE intelligence supports the needs of DOE, DELETED

ENERGY ASSESSMENTS

Current DELETED energy developments (i.e., oil, coal, gas, and nuclear power) is critical to the Department's ability to meet its responsibilities for emergency planning, crisis management, policymaking, meeting treaty and international obligations, and supporting U.S. economic and international trade objectives. DELETED provides indicator and warning information otherwise unavailable on actual or potential oil supply disruptions, thus optimizing DOE's responsiveness during national energy emergencies or international crises. Finally, the program monitors foreign nuclear energy developments to assess their impact on other energy resources.

CAPITAL EQUIPMENT

The FY 1987 request for capital equipment for the Verification and Control Technology program is $4.2 million, a $1.4 million decrease from the FY 1986 figure of $5.6 million. This reflects completion of major projects supporting automation activities at Headquarters. The funding is required at the various national laboratories to meet high priority equipment needs generated by the detection technology and analytical support functions. These funds will support purchase of equipment to provide more timely intelligence analysis; upgrade existing electronics equipment; upgrade computer software/hardware systems; update existing laboratory equipment; and develop the means for in-country treaty verification. This equipment constitutes the basis for advanced development for Verification and Control Technology activities at the national laboratories.

CONSTRUCTION

To ensure that we can meet requirements for spaceborne sensors in the late 1980's and beyond, the Department is requesting an appropriation of $2.0 million to complete work on the Space Science Laboratory at Los Alamos National Laboratory. Work on the laboratory was started under the Fiscal Year 1985 initial appropriation of $1.0 million. The funding in Fiscal Year 1986 will complete the engineering design and move to construction. The $2.0 million request for FY 1987 will fund construction, design, and procurement of standard equipment and construction contingencies. The laboratory will be completed in FY 1988 at a total estimated cost of $7.5 million.

This facility will enable us to perform an unprecedented planned workload of technology development, fabrication, and operational support activities. The new capabilities it will provide are essential, if the Department is to carry out several classified research and development projects which will be very important to the Nation's security in the 1990's. These projects pose significant technological challenges to our scientists and engineers, in some cases calling for development of virtually new technologies before even prototype sensors can be deployed. Present facilities can barely meet the technical demands of current research and development and fabrication activities, much less the development of new technologies and the stepped-up fabrication and delivery schedule. In addition to impeding the successful development of new technologies, our present facilities would probably increase the cost because the sensors would have to undergo manual testing, which not only is less likely to meet stringent quality assurance standards but also is very time consuming and increases the risk of missing a delivery commitment.

DELETED

PROGRAM DIRECTION

Program direction funds provide for the salaries, benefits, and travel expenses for 66 full-time equivalents associated with the management and direction of the Verification and Control Technology program at DOE Headquarters in Washington, D.C. These employees are responsible for technical and analytical program management of field activities, and execution of Headquarters staff functions.

The request of $4.4 million, an increase of $.6 million over the FY 1986 figure of $3.8 million, provides for full year staff support, employee advancement, and normal administrative costs.

This completes my statement. I will be happy to respond to any questions.

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202-252-5644

BIOGRAPHY

EDWARD V. BADOLATO

Edward V. Badolato was appointed Deputy Assistant Secretary for Security Affairs, Office of Defense Programs, U.S. Department of Energy (DOE) on December 4, 1985. He is responsible for the protection, control, and accountability of special nuclear materials components and nuclear weapons at 59 DOE facilities throughout the United States. He is also responsible for verification of international arms agreements and control of the transfer of sensitive technology information and equipment. He also has responsibility for the control of classified information and the appropriate granting of security clearances.

Prior to assuming his current duties, Mr. Badolato had served as a Special Assistant to the Secretary of Energy for several months. He was previously assigned to the Department of State's Bureau of Politico-Military Affairs.

Until his recent retirement, Mr. Badolato had served in the U.S. Marine Corps as a career officer since 1960. During his twenty-five year career, he served in various staff assignments and commanded Marine units at every level from platoon through battalion both ashore and afloat throughout the world. During his tours of duty in Vietnam, he was a company commander, an advisor to the Vietnamese Marines, and a Battalion Operations Officer.

Mr. Badolato is an accomplished arabist, having studied at the Defense Language Institute, the Foreign Service Institute, and the American University of Beirut, and has served extensively in the Middle East and Persian Gulf areas in numerous assignments, including UN Military Observer, Defense Attache in Beirut, Naval Attache in Syria, Naval Attache in Cyprus, and on a Fellowship in the Persian Gulf Area.

As the Project Officer for Laser Weaponry Programs at the Marine Corps Development Center at Quantico, Virginia, in the early 1970's, he participated in the development of the Laser Guided Bomb, the Laser Target Designator, the Laser Rangefinder system, and High Energy Laser systems.

Mr. Badolato was born August 19, 1935, in Baltimore, Maryland. Upon graduation from Towson State University in 1960, he was commissioned a Second Lieutenant in the United States Marine Corps. Mr. Badolato attended the Marine Corps Command and Staff College in 1973, and graduated with distinction from the U.S.

(more)

Naval War College in 1980. He has performed graduate studies at Georgetown University, George Washington University, and the University of Virginia. In 1981 he was assigned as the Marine Aide to the Assistant Secretary of the Navy; and in 1983, he was selected as a Strategic Studies Fellow by the Chief of Naval Operations.

Mr. Badolato is the author of numerous articles on the Middle East, Latin America, Naval Strategy, Fire Support Tactics, Laser Guided Weaponry, and Riverine Operations. He is a member of the Marine Corps Association, the retired Officers Association, the National Rifle Association, the Army and Navy Club, and the Foreign Service Officers Association.

February 1986

WITNESSES

	Page
Abrahamson, Lt. Gen. J.A	1343
Asselstine, J.K	175
Badolato, E.V	1343
Bernthal, F.M	175
Clagett, W.H	785
Cross, R.J	785
Cunningham, G.H	175
Davis, J.G	175
Denton, H.R	175
Farrell, J.M	599
Fitzpatrick, D.R	785
Flowers, G.P	599
Foley, S.J., Jr	1071, 1343
Garrish, T.J	599
Geisinger, H.C	785
Hesse, M.O	599
Johnson, P.T	785
Layton, J.C	599
Malsch, Martin	175
McKee, Adm. K.R	1071
Meinhardt, J.L	1071
Minogue, R.B	175
Norry, P.G	175
Palladino, N.J	175
Roberts, T.M	175
Roe, J.W	175
Scroggins, R.M	175
Sousa, A.G	1
Stello, Victor, Jr	175
Taylor, J.M	175
Wagner, Dr. R.L., Jr	1343
Wilkerson, R.H	785
Withers, Maj. Gen. G.K., Jr	1343
Zech, L.W., Jr	175

INDEX

Atomic Energy Defense Activities

Page

Naval Reactors:
  Advanced fleet reactor ... 1075, 1127, 1140
  Advances in nuclear propulsion ... 1077
  Capital equipment funding ... 1135
  Challenger accident ... 1082
  Civil service changes ... 1082
  Comparison of United States and Soviet submarines ... 1079
  Fuel factory ... 1073, 1129
  Fiscal year 1987 budget request ... 1077, 1133
  Industrial base ... 1125
  Light water breeder program ... 1074, 1137
  Los Angeles class submarine ... 1078, 1081, 1084
  Naval reactor program statistics ... 1072
  Nuclear powered fleet ... 1078
  Opening statement of Adm. Kinnaird R. McKee ... 1071
  Overview of naval reactors ... 1071
  Patent rights ... 1139
  Personnel impact of retirement reform ... 1083
  Personnel retention ... 1087
  Prototypes ... 1074
  Public versus private shipyard work ... 1085
  Reactor plant disposal ... 1131
  Red October ... 1086
  Security ... 1081, 1088
  Senior executive rotation ... 1130
  Shipbuilding program ... 1132
  Soviet record ... 1072
  Soviet submarine ... 1081, 1087
  SSN-21, "Seawolf" ... 1075
  Statement of Adm. Kinnaird R. McKee ... 1239
  Submarine design ... 1080
  Test facilities ... 1077
  Training ship ... 1128
  Uranium enrichment ... 1136
  688 class improvements ... 1076
Nuclear materials:
  Burial grounds ... 1207
  Changes from fiscal year 1986 appropriation ... 1101
  Cooling lake construction ... 1144
  Cooling water towers at Savannah River ... 1145, 1193
  Defense waste and byproducts management ... 1111
  Defense waste processing facility ... 1113, 1201

Nuclear materials—Continued Page
  Employment levels 1161
  Environment, safety and health 1117
  Environmental concerns at Savannah River 1149, 1192
  Environmental improvements 1191
  Environmental lawsuits 1121
  Environmental problems 1142
  Environmental projects 1177
  Extend life of N reactor 1154
  Fernald cleanup work 1150
  Fernald environmental funding 1151
  Funding by location 1187
  Fiscal year 1987 budget request 1091
  Gramm-Rudman-Hollings adjustments 1119
  Hanford site environmental impact statement 1205
  Hanford vitrification facility 1204
  Hanford waste tank project 1208
  High-level waste tanks 1210
  Idaho calcined solids storage 1209
  New production reactor 1156
  Nuclear weapons stockpile memorandum 1095
  Opening statement of John L. Meinhardt 1089
  Overview of nuclear materials 1089
  Plasma separation process 1123, 1173
  Process facility modifications 1169
  Processing 1181
  Production reactors at Savannah River 1141
  Reactor operations 1179
  Reactor production assurance 1103
  Reactors 1097
  Research program to improve production 1153
  Safeguards and security 1191
  Saltstone facility 1203
  SDI payloads 1219
  SDI power requirements 1221
  SP-100 design 1215, 1226
  SP-100 potential materials problems 1224
  SP-100 safety features 1236
  Space nuclear reactors 1213, 1229, 1233
  Special isotope separation 1105, 1162, 1176
  Special nuclear materials report 1172
  Statement of John L. Meinhardt 1254
  Summary 1117
  Supply and demand 1093
  Supporting services 1184
  Thermal discharge off Savannah River site 1147
  Thermal mitigation 1099, 1193
  Tritium reactors 1155
  Uranium enrichment 1109, 1171
  Use of unobligated balances 1199
  Waste isolation pilot plant 1115, 1200, 1206
Weapons activities, strategic defense initiative, safeguards and security:
  Aircraft requirements for fiscal year 1987 1716
  Antisubmarine warfare nuclear depth/strike bomb 1618

Weapons activities, strategic defense initiative, safeguards and security—Continued

Page

- Antisubmarine warfare/standoff weapon 1617
- Atomic demolition munitions 1690
- Atomic energy defense activities budget increase 1715
- Avlis program 1465
- Capabilities of United States and Russian nuclear weapons 1597
- Capability versus cost 1523
- Cerberus 1455
- Challenger disaster impact 1511
- Compact of free association 1612
- Comprehensive test ban 1361, 1516
- Computer coordination 1556
- Computer leases and computer procurements 1550
- Computer security 1464
- Computers 1552
- Coordination of threat guidance 1641
- DOD budget request 1356
- DOE defense programs—fiscal year 1987 budget request summary 1380
- DOE SDI nuclear directed energy weapon research 1507
- DOE SDI priorities broad research program 1394
- DOE-wide safeguards and security 1449
- DOE/DOD SDI interface 1364
- Defense programs fiscal year 1987 appropriations request 1351, 1353
- Defense programs mission fiscal year 1987 appropriations request 1347
- Defense programs project to reduce DOE utility cost 1680
- Defense programs staffing 1588
- Department of Energy insider program elements 1427
- Department of Energy safeguards and security crosscut 1526, 1646
- Detection systems development 1673
- Detection of submarines 1466
- Directed energy weapons 1495
- Duplication of efforts 1492
- Environment 1587
- Escalation 1603
- Espionage activities 1489
- Exploratory research and development 1598
- Fiscal year 1986 appropriation transfer 1398
- Fiscal year budget request recap 1412
- Fiscal year 1987 budget request 1345
- Fiscal year 1987 new construction projects 1404
- Fiscal year 1987 shifting of program emphasis 1655
- Fiscal year 1969–87 weapons research and development 1359
- Fiscal year 1987 congressional submission 1382
- Free electron laser 1379
- Funding tradeoffs 1457
- GSO and inventory balances 1557
- Gramm-Rudman impact 1503, 1506
- Gramm-Rudman-Hollings fiscal year 1986 reductions 1384
- Gramm-Rudman-Hollings reductions 1385
- Hazardous waste 1467
- How much is enough 1635
- Indirect expenses 1564

Weapons activities, strategic defense initiative, safeguards and security—Continued

Page
Inertial confinement fusion facilities 1620
Inertial confinement fusion funding 1519, 1619, 1623
Inertial fusion activities 1401
Inflation rate 1574
Interactive graphics systems 1581
International security affairs 1437
Inventory of DOE aircraft funded by defense programs 1547
Inventory of passenger motor vehicles 1533
Investment strategy 1387
Joint Department of Energy/Department of Defense negotiations 1522
Laser tests 1461
Lie detectors 1454
Manpower levels 1358
Marshall Islands 1610
Midgetman missile warhead 1467
Modernization program 1509
Narrative summaries of accidents 1469
National laboratory funding for SDI support 1369
New construction 1405
Nuclear accidents 1468
Nuclear budget activities 1494
Nuclear deterrence 1460
Nuclear directed energy weapons operating expenses 1595
Nuclear directed energy weapons 1504
Nuclear materials production plant maintenance 1579
Nuclear pellet gun 1497
Nuclear proliferation 1491
Nuclear SDI policy statement 1396
Nuclear safeguards and security focal point 1443
Nuclear safeguards and security program 1423
Nuclear safeguards and security 1422, 1425
Nuclear testing is necessary for credible deterrent 1410
Nuclear testing 1362, 1455, 1499
Nuclear warhead detonation 1493
Number of DOE motor vehicles for safeguards and security 1535
Nunn-Johnson warhead limits 1510
Office of Classification 1429, 1430
Opening statement—Dr. Richard L. Wasner, Jr 1354
Opening statement—Edward V. Badolato 1413
Opening statement—Lt. Gen. James A. Abrahamson, USAF 1363
Opening statement—Maj. Gen. G.K. Withers, Jr 1379
Opening statement—Sylvester J. Foley, Jr 1344
Operating funding for inertial confinement fusion 1521
Operating funding for inertial fusion activities 1400
Operation Cerberus 1415, 1418, 1451
Particle beams 1496
Plutonium and tritium production facilities 1357
Policy for nuclear research in SDI 1373
Production workload 1609
Purchase of passenger motor vehicles 1534
Questions and answers prepared for the record 1513
RD&T facilities revitalization 1408

Weapons activities, strategic defense initiative, safeguards and security—Continued

Page
Rail gun ... 1495
Relationship with CIA ... 1454
Relationship with FBI ... 1454
Report of the special project team ... 1416
Research and development applicable to conventional warfare ... 1498
Responses to weapons funding criticisms ... 1458
Restoration and revitalization ... 1575
Restore and maintain ... 1406
SDI increase ... 1502
SDI program objectives ... 1366
SDI progress ... 1496
SDI reimbursable program ... 1370
SDI restructuring ... 1508
SDI transfer funds ... 1494, 1501, 1503
Safeguards and security ... 1349
Safeguards and security crosscut ... 1447
Safeguards and security crosscut estimates ... 1442
Security affairs ... 1420, 1431
Security affairs programs ... 1414
Security investigations ... 1432, 1433, 1491
Size of and expenditures for Department of Energy guard forces ... 1529
Small intercontinental ballistic missile ... 1619
Soviet capability ... 1358
Soviet concerns ... 1500
Soviet countermeasures ... 1372
Soviet countermeasures to defense ... 1371
Soviet developments ... 1505
Special isotope separation ... 1358
Special projects funding ... 1607
Status of DOE safeguards and security ... 1524
Stockpile improvement program ... 1390
Strategic defense initiative ... 1349, 1367, 1393
Strategic defense initiative ... 1459, 1461, 1488
Strategic defense initiative funding ... 1392
Strategic defense initiative tests ... 1608
Strategic defense initiatives ... 1555, 1589
Strategic defense research at Los Alamos ... 1377
Summary ... 1413
Summary of computer leases and computer purchases ... 1551
Summary of fiscal year 1986 impact on weapons program ... 1386
Technologies relevant to strategic defense ... 1378
Test ban treaty ... 1456, 1462
Testing capabilities funding ... 1606
Uncosted obligations ... 1580
Underground testing ... 1411
Verification technology ... 1466
Verification and control technology ... 1436, 1439
Warhead safety features ... 1468
Weapon delivery schedules ... 1613
Weapon production ... 1355
Weapon safety ... 1391
Weapons activities year-end uncommitted obligations ... 1571

Weapons activities, strategic defense initiative, safeguards and security—Continued
Page
  Weapons development, engineering, and certification 1605
  Weapons systems in production 1390
  Weapons technology base funding 1604

Departmental Administration

Advisory committees 683
Aircraft purchases 700, 702
Appropriation language 674
Auditors 696
Board of Contract Appeals 712
Bonneville Power Administration 700
Budget request 696
Comparability adjustments 690
Congressional, intergovernmental, and public affairs 602, 607, 709
Consultants 683
Contractor breakdown 697
Contractor lobbying regulations 612
Department of energy foreign travel 616
Employment estimates 676
Financial audits 696, 697
Fiscal year 1987 budget request 599
Foreign travel 615
Full-time equivalents 713
General counsel 600, 605, 695, 713
Hydropower licensing program 699
Inspector general 603, 607, 699
International affairs 709
International policy studies 710
Justice Department coordination 605
Litigation on second repository 611
Major facilities construction project initiation 717
Major facilities program report 715
Major system acquisition process 718
Management and administration increase 604
Management initiatives 603
Management of deobligations 675
Minority Educational Institutions Assistance Program 714
Monitored retrievable storage 610
Office of Minority Economic Impact 601, 606, 609, 613, 703
Office of the Secretary 690
Opening statement of Martha O. Hesse 599
Operations offices 675
Overtime 682, 702
Permanent waste repository 611
Policy, planning and analysis 704
Questions and answers for the record 674
Reprogramming of funds 696
Sale of power marketing administration 714
Severance pay 682
Staff reductions 608
Staffing 697

Page
Standard level user charges increase 675
Statement of George J. Bradley, Jr. for the record 770
Statement of Geraldine P. Flowers 739
Statement of J. Michael Farrell 731
Statement of Jo Ann Elferink for the record 762
Statement of John C. Layton 753
Statement of Martha O. Hesse 722
Statement of Theodore J. Garrish 748
Support services 682
Training 682
Transuranic waste 700
Travel funding 675
Travel 682
U.S. citizens employed in South Africa 610
U.S. citizens in South Africa 610
Unobligated balances 675
Uranium enrichment demand charges 614
Western Area Power Administration 702
Windfall profit tax 699

Federal Energy Regulatory Commission 1

Power Marketing Administrations

Aluminum industry 796, 879
Bonneville payments to Treasury 839
Bonneville Power Administration 794
Bonneville power sales to California 799, 919
BPA borrowing authority 987
BPA nuclear plant status 794
BPA rates 863, 891
BPA repayment progress 795
BPA/Power Planning Council 876
Buy American provision 947, 952
California-Oregon intertie 803
Canadian power 873
Central Valley project 930, 940
Competition in Contracting Act 950
Competition in electric rates 796
Computer aided engineering equipment 914
Conservation 885, 889
Construction work in progress 799
Contract conversions 898
Cost versus market based rates 801
Crater Lake construction 861
Cumulative investment and receipts 858
Debt repayment 935
Defederalization 805, 808, 809, 810, 845, 847, 864, 911
Deferrals 860, 894, 898, 907
Deferred projects 939
Economic analysis for proposed changes 849
EHV domestic manufacturers 949
EHV equipment 832
EHV procurements 810, 813, 830, 969, 972

Page
Electric rates 981
Emergency fund 908
Fish and wildlife 880, 990
Foreign and domestic EHV acquisitions 816
Future resource decisions 842
Gramm-Rudman impacts 985
Hoover Powerplant Act 905
Impact aid 891
Indian water rights 933
Integrated power systems 805
Interest rates 937
Intertie access policy 844
Litigation status 865
Load flexibility 812
Manitoba hydro project 843, 909
Mead-Phoenix DC intertie 837
Net billing 862
New hydro development 992
Non-Federal financing of projects 811
Nonpayable financing 812
Opening statement of Donna R. Fitzpatrick 785
Opening statement of Harry C. Geisinger 788
Opening statement of Peter T. Johnson 787
Opening statement of Robert J. Cross 787
Opening statement of Ronald H. Wilkerson 789
Opening statement of William H. Clagett 791
Pacific Northwest-California Transmission Line 856
Planned procurements 834
PNW–PSW intertie 888
Power contracts 798
Power dispatcher salaries 913
Procurement of transformers 861
Project power 804
Purchase power and wheeling 895, 906
Questions and answers for the record 846
Rate increases for Central Valley project 803
Rate review status 913
Rates and financial condition 902, 1003
Reception and representation fund 988
RedArk Development Authority 998
Refinancing BPA debt 807
Regional impact 912
Regional utility rates 977
Repayment reform 792, 793, 798, 809, 804, 839, 841, 847, 850, 896, 900, 912, 974
Residential exchange 944
Revenues 851, 937, 941
Richard B. Russell project 893
Sale of Alaska Power Administration 792, 860
Sale of PMA's 786, 848, 893, 934
Sale of Southwestern Power Administration 899
Sidney tie-line 809
Site "C" project 841, 943
Statement of Donna R. Fitzpatrick 1004
Statement of Harry C. Geisinger 1025

	Page
Statement of Peter T. Johnson	1013
Statement of Robert J. Cross	1006
Statement of Ronald H. Wilkerson	1037
Statement of William H. Clagett	1045
Surplus power	870, 874
System reliability	900
Tax-exempt bonding	836
Third AC intertie project	910, 930, 938, 943
Tracy-Livermore tie-line	915
Transmission system reliability	1001
Use of Government power	903, 1000
Wholesale power rates	855
Wood-pole transmission structures	908
U.S. Nuclear Regulatory Commission	175